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New York

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GOVERNMENT
OWNERSHIP OF
RAILWAYS

GOVERNMENT OWNERSHIP OF RAILWAYS

BY

SAMUEL O. DUNN

EDITOR OF THE RAILWAY AGE GAZETTE; AUTHOR OF
"THE AMERICAN TRANSPORTATION QUESTION"



NEW YORK AND LONDON
D. APPLETON & COMPANY

1914

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PREFACE

May 16, 1935 DA Head

In an earlier book entitled "The American Transportation Question," the author has discussed the railway problem of the United States as it presents itself if it be assumed that the policy of private ownership of railways is to be maintained. The present work has two purposes. One is to give information as to the comparative results of private and public ownership and management of railways in various leading and typical countries. Its other, and main, purpose is to try to direct serious consideration to the question of what — in view of the experience of other countries with state ownership and management, and of the conditions existing in the United States — would probably be the results of the adoption of government ownership and management of railways in this country.

The subject of government ownership of railways is not without timeliness in the United States. In a way, it is always timely; for it is always the subject of more or less discussion. And, if private management and public regulation of railways in this country should ever be decided to be a failure, government ownership would be the only alternative; and never were private management and public regulation more distinctly on trial than they are at present. Furthermore, Congress, at the time this book is being finished, is considering a plan for the construction by the federal government of over 700 miles of railways in Alaska at an estimated cost of \$35,000,000 to \$50,000,000. In the state of public opinion only a few years ago such a plan would not have been seriously discussed; and the fact that its adoption now appears not at all improbable shows

how the attitude of many public men and of a large part of the public toward the extension of government functions has changed.

In respect of importance the question of government ownership of railways is hardly surpassed by any other that seems likely ever to be presented to the American democracy for settlement.

The author can express but inadequately the debt of gratitude that he owes to a number of persons who have aided him by furnishing valuable information and making constructive criticisms and suggestions. One of those to whom he is most indebted is Mr. W. J. Cunningham, Assistant Professor of Transportation in Harvard University, who kindly read most of the manuscript. Mr. Cunningham has a practical understanding of railway operation in the United States which has been gained in active railway service; he is very familiar with the literature of transportation; he has traveled extensively on the railways of both this country and Europe; he has a natural tendency to be judicial and fair; and he was, therefore, able to offer many criticisms and suggestions that were very valuable.

Acknowledgment must also be made to the Bureau of Railway Economics of Washington, D. C.; and especially to its Director, Mr. Logan G. McPherson; its Chief Statistician, Professor F. H. Dixon; and its Statistician, Mr. J. H. Parmelee, for many kind and valuable services that have been freely rendered by them. Mr. McPherson and Dr. Dixon are very familiar with transportation affairs in this country; both have traveled widely on European railways, the former being the author of "Transportation in Europe," an authoritative work on its subject; and they are both economists of prominence; while Dr. Dixon and Mr. Parmelee are statisticians of recognized standing. All of these gentlemen have read parts of the manuscript

and offered criticisms and suggestions. The Bureau also furnished the statistics regarding accidents on foreign railways which appear in Chapter XI and in Appendix B; and material appearing in its various publications has been liberally used.

In justice to all these persons it should be added, however, that they are in no way responsible for any of the statements of fact made or the conclusions reached in the following pages.

S. O. D.

CHICAGO,
August 1, 1913.

CONTENTS

CHAPTER	PAGE
I THE QUESTION OF GOVERNMENT OWNERSHIP IN THE UNITED STATES	1
II RELATION OF RAILWAYS TO THE STATE	14
III RELATION OF RAILWAYS TO THE STATE (<i>continued</i>)	31
IV CAUSES OF GOVERNMENT OWNERSHIP	49
V COST OF CAPITAL	57
VI ORGANIZATION AND OFFICIAL PERSONNEL	74
VII EFFECTS OF CONSOLIDATION UNDER GOVERNMENT OWNERSHIP ON ECONOMY OF MANAGEMENT	99
VIII INFLUENCE OF POLITICAL AND LABOR CONDITIONS ON ECONOMY OF MANAGEMENT	117
IX ECONOMY OF MANAGEMENT OF STATE AND PRIVATE RAILWAYS	143
X ADEQUACY OF SERVICE	181
XI QUALITY OF SERVICE	204
XII SAFETY OF SERVICE	228
XIII RATE-MAKING: GENERAL CONSIDERATIONS	242
XIV RATE-MAKING: THE ADJUSTMENT OF RATES	254
XV RATE-MAKING: THE AMOUNT OF RATES	287
XVI FINANCIAL RESULTS	303
XVII CONDITION OF LABOR	331
XVIII POLITICAL EFFECTS	351
XIX CONCLUSION	372
APPENDIX A	381
APPENDIX B	385
INDEX	387

GOVERNMENT OWNERSHIP OF RAILWAYS

CHAPTER I

THE QUESTION OF GOVERNMENT OWNERSHIP IN THE UNITED STATES

No more important question confronts the people of the United States than the question of what policy they shall pursue in future in dealing with the railways of the country. Formerly railways were regarded as property which did not differ much in its nature from other private property; and the railway companies were, therefore, allowed to conduct their businesses with almost as much freedom from government interference as were other kinds of concerns. In recent years a policy of strict and comprehensive government regulation has been adopted. There may be many persons who feel that, with the adoption of this policy of regulation, the railway problem of the country has practically been solved. Those who are familiar with past and present conditions in the railway business, who have followed closely the development of government regulation, and who know thoroughly the existing relations between the railways, on the one hand, and the public authorities and the public, on the other, are but too keenly aware that the railway problem is not yet solved, or anywhere near solved. If the policy of private management, supplemented and supervised by public regulation, is to be continued there are many questions regard-

ing the relations that ought to be established between the governments, the public and the railways which must yet be settled in order to make that policy a real success. Transcending in importance all of these questions is that as to whether the policy of private ownership and management shall be continued at all.

The issues raised by regulation are now uppermost. But how long this will continue to be the case no one can foretell. Regulation is advocated by many as a substitute for public ownership. But whether it shall prove a success or a failure it is not impossible that it may turn out to be but a long stage in a march toward government ownership. If regulation proves a failure this fact may be used as an effective argument in support of the proposition that only by taking over the railways can the public make them satisfactorily serve public purposes. On the other hand, if regulation proves a success, this may be accepted as a potent argument in support of the view that the government could successfully manage the railways.

The fact that government ownership, while it may as yet be receiving no great amount of serious attention from the public in general, is nevertheless a question that must be reckoned with, has long been clearly perceived by many persons who have taken special interest in, and devoted earnest study to the American railway problem. For years men whose views are of weight have been saying that unless certain things were done or others ceased to be done in the United States the adoption of government ownership of railways would be the result. Twenty-eight years ago, in finishing his book on "Railroad Transportation,"¹ President Hadley of Yale University expressed the opinion that there was a strong popular feeling in favor of this policy — a feeling which he thought was unsuspected by

¹ "Railroad Transportation," p. 258.

those in authority. That the question was not then under discussion, he said, must not blind people to the fact that forces were at work which might prove all but revolutionary in their character. "If it be true," he added, "that government railroad ownership would be a most serious political misfortune for the United States, we must be prepared to meet the danger with our eyes open. Unless we are able to face it intelligently, and to show reason for our action, the widespread feeling in its favor will prove too strong for us." A movement for it might not come for many years, but the lessons of the Granger movement indicated what forces would be behind it when it did come.

Seventeen years later Martin A. Knapp, long Chairman of the Interstate Commerce Commission, and now Presiding Judge of the Commerce Court, closed a paper² by saying that if abuses then prevalent continued it would be necessary to acquire and operate the railways as a government function; that if regulation failed public ownership would follow.

A few years later there occurred an episode which seemed to indicate that perhaps the views expressed by Dr. Hadley and Judge Knapp were not well-founded. In 1906 William J. Bryan, on returning from a trip around the world, made a famous speech at Madison Square Garden in New York City, in which he advocated government ownership of railways. He believed, he said, that "railroads partake so much of the nature of a monopoly that they must ultimately become public property and be managed by public officials in the interest of the whole community." The abuses Judge Knapp had mentioned Mr. Bryan believed had not been abolished, and never could

² *Annals of the American Academy of Political and Social Science*, Jan., 1902, p. 73.

be under private ownership. Mr. Bryan's speech was given a reception which must have been very surprising to that astute politician. It was unanimously criticised and denounced by the Republican press. It was received with dissent and condemnation by most of the Democratic press. And it looked as if the press faithfully reflected public opinion. Mr. Bryan himself apparently was convinced that this was the case; and when he was nominated for President by the Democrats in 1908 he said that he did not consider government ownership an issue. But his speech was used against him; he was beaten; and probably it helped to defeat him. No prominent American public man has since advocated government ownership.

There are many, however, who doubt if this incident meant much, and who think that the adoption of public ownership is not improbable, or is even probable. This opinion has been expressed by some who oppose that policy and by some who favor it. Carl S. Vrooman, an advocate of state ownership, in his book, "American Railway Problems," expresses the belief that public ownership is inevitable, and urges steps to prepare for it so that the transition will be easy and inexpensive. William W. Cook, an eminent corporation lawyer, has argued³ that private ownership in its present form cannot last. But he deprecates government ownership. He advocates as a substitute for both public ownership, and private ownership in its present form, the creation of a national railway holding corporation. The stock would be sold to the public, and the proceeds used to buy the present securities of the railways. A return of three per cent. would be guaranteed by the national government. The first directors would be appointed by the government and would appoint

³ *McClure's Magazine*, Jan., 1912.

their successors. By this plan, Mr. Cook contends, the public would secure the advantages, and escape the disadvantages, of private as well as public ownership. W. M. Acworth, the English authority on railway economics — best informed and keenest of foreign students of American railways — believes that the United States "will get much nearer to the brink of nationalization than they have come at present and will then start back on the edge of the precipice and escape by some road not yet discernible."⁴ W. W. Finley, president of the Southern Railway, said a few years ago that he did not think a majority of the people of the United States favored government ownership, or that Congress and the state legislatures were consciously moving toward it. But he did believe that "if some of the more extreme legislation already enacted is supplemented along the lines now proposed the ultimate result must be to break down the system of private ownership." Most of the additional legislation that Mr. Finley deprecated has been passed. These views are typical of many that have been expressed by economists, publicists, statesmen and railway officers.

Doubtless some advocates of government regulation have predicted that if the policies they favored were not adopted public ownership would result, not so much because they believed this, as because they wished to frighten those who opposed them. Doubtless, also, some who have opposed certain forms of government regulation have predicted that they would lead to government ownership, not so much because they believe this as because they wished to prevent the regulation. But there are many keen and foreseeing men, some of whom oppose and some of whom favor government ownership, who are convinced that we are moving toward it. Referring again

⁴ *Bulletin of the International Railway Congress*, Aug., 1911.

to Mr. Bryan's speech, probably the chilling reception given to it did not have much significance. The plan put forward by him was not adapted to attract even the friends of government ownership. Out of deference to the state's rights traditions of his party he suggested that the states acquire and operate the branch lines of the railways and the nation the main lines. Most people saw that this scheme would not work. And the speech was ill-timed. The Hepburn Act had just gone into effect; and the public was disposed to give the new policy of regulation a fair trial.

There seems to be a good deal of evidence that we are moving toward government ownership. The number of Socialists is increasing. As they favor public ownership of all means of production, distribution and exchange, doubtless they should be counted for each species of it. There is also a growing number of advocates of social reform who think that their programmes would be furthered by public ownership of many or all public utilities. There are many persons who believe that successful regulation would be preferable to public ownership, but who anticipate that the railways will offer so much resistance to regulation as to make it a failure. Finally, many who have become believers in the success of public regulation may sooner or later change their minds. A large part of them are almost certain to be disappointed by the results of regulation. For as long as human nature remains unregenerate there will be evils and abuses in the railway and every other business under any scheme of regulation or management. There also will always be people who will regard as evils demanding reform some conditions that are bad but ineradicable, and others that are really not bad at all. So, whether regulation is a success or not, many who now regard it optimistically are apt to conclude finally that it is not a success, and to decide that only under

government ownership can railways be made to best promote the public welfare.

Developments may be taking a turn which will cause even those classes that in the past would have offered the strongest opposition to government ownership to cease to oppose it, or even to begin to favor it. These classes are railway officers and railway stockholders. Many railway officers complain that government regulation is so restricting their freedom of action, and limiting their opportunity, as to deprive railway work of its attractions; and the tendency to limit the profits of railways is causing some large stockholders to feel that they might gain by selling out to the government and investing where there is no interference with prices or profits.

With the actual and potential sentiment for government ownership apparently growing, and the opposition to it from interested sources apparently tending to decline, it is conceivable that conditions and public opinion might so crystallize as suddenly to bring it about. It has come thus suddenly in several countries. It may be said that the Anglo-Saxon mind and character and the form of our government would prevent hasty action. But our people are not wholly Anglo-Saxon; probably there would be no Constitutional obstacle to government acquisition of the railways if the government offered just compensation; and if such an obstacle were found to exist the Constitution could be amended.

The question of government versus private ownership ought, therefore, to be receiving serious study, not only from economists and statesmen, but from the public. It can be considered dispassionately now. It could not be if it became a partisan issue. No question can more rightfully demand conscientious and careful study. The railways of the United States had outstanding in the hands of the public on June 30, 1910, \$5,526,991,778 of capital

stock and \$8,811,584,162 of funded debt, a total of \$14,338,575,940. They operated 241,056 miles of line, which exceeds the mileage of all the government railways of the world.⁵ Their gross operating revenues were \$2,750,667,435, or three times the receipts of the United States government. Their operating expenses were \$1,822,630,433, or twice the disbursements of the government. The wages and salaries paid by them amounted to \$1,143,723,306. They employed 1,699,420 persons, or over 11 per cent. as many as voted for President in 1912. They paid in taxes in 1911 over \$108,000,000. This would defray the cost of government in any of the states but one, including the expenses of all cities and minor civil divisions. These facts indicate forcefully, but very inadequately, the magnitude and gravity of the question.

The effects of the adoption of government ownership on public finances and private enterprise, on the tax-paying public and private investors, on travelers and shippers and the consuming public, on the working class — especially that part of it employed on the railways — and on politics and government, would be greater and farther-reaching than those of any other conceivable economic or industrial change, except that to Socialism. Such a change would be more important in the United States than in any other leading country, because railway transportation plays a greater role here than in any other leading country. The mileage of railways is greater in proportion to population than in most other leading countries, the investment in them larger in proportion to the total wealth, the number of their employes greater in proportion to the number of voters. The prosperity and development of our country are more than commonly dependent

⁵ The total mileage of the state-owned railways of the world in 1910 was 186,068 miles, or 77.2 per cent. as great as the mileage of the railways of the United States.

on the character and adequacy of its transportation facilities; and it is more dependent on railways for its transportation than any other leading country.

Until recent years there were a good many serious abuses in railway management in the United States. Rebating and other forms of unfair discrimination were prevalent. Stock watering and "melon cutting" were not uncommon. The railway corporations had an excessive influence over politics and government which they used to the public detriment. The governments of the states and the nation were, at the same time, no purer and less efficient. Civil service laws and rules did not exist or were not enforced, and practically all public officials and employes were selected, retained and dismissed for political reasons. Grafting in public office was common. Not unnaturally, it was assumed at that time that the only choice was between a system of private railway management which was addicted to rebating, stock jobbing and political corruption, and a system of public management under which the officers and employes would get, hold or lose their places for political reasons; under which grafting would be universal, and inefficiency chronic.

Civil service regulations now exist generally, and are pretty well enforced by most of our governments, national, state and municipal. Dishonesty in public places has been reduced and efficiency in them increased. The changes in railway management have been even more marked. Hundreds of laws for the regulation of railways have been enacted. The Interstate Commerce Commission and state railway commissions have been given extensive authority to administer these laws; and every citizen with a grievance can appeal to them and get a speedy, sympathetic and inexpensive hearing. Rebating has been almost abolished and other forms of unfair discrimination have been greatly reduced. How much rail-

way influence over politics and government has been curtailed is indicated by this increase of regulation.

Owing to these changes helpful discussion of the question of private versus public ownership must now, to some extent, proceed along new lines. The choice is no longer between public management and unregulated private management, but between public management and strictly regulated private management. The past history of both public affairs and railway management may throw light on the question. But enlightening consideration of it must deal with conditions as they are, not as they were.

While private ownership and management under strict public regulation is now our policy, public ownership has been widely adopted. It has prevailed for many years in some countries. In trying to decide on the best future policy for us we are justified in drawing on the experience of other nations. But the experience of others is valuable only when used discriminatively. We must keep in mind that what may be good for a man or a nation with one set of antecedents or conditions may not be good for another with antecedents and conditions quite different. Political economy and political philosophy, like medicine, dogmatize less than formerly, and try now to diagnose and prescribe according to the history and circumstances of each case.

The arguments that are advanced for and against government ownership of railways are numerous and various. Many of them go to the very root of the most vital questions of political and politico-economic policy. Perhaps the main arguments presented for a change to government ownership in the United States may be summarized as follows:

1. The trend of the thought of the best minds of the world, it is said, favors, and the movement of the leading nations of the world is toward, a more active and general

participation by the state in industrial affairs. This trend has led, among other things, to the widespread adoption of government ownership of railways, especially in leading countries. The government that does not follow the example thus set stamps itself as unprogressive and as lacking in a proper regard for the material welfare of its people.

2. Government ownership, it is added, would in several ways reduce the cost of rendering the service of transportation. The government could borrow capital at a lower rate of interest than corporations, which would reduce the amount that would have to be earned to cover fixed charges. It could save in operating expenses in various ways — among others, by reducing the "fancy" salaries now paid to the higher officers of the railways; by concentrating the management in the hands of a smaller number of officers; by standardizing methods and equipment; by handling traffic by the least expensive route available in each case; and by eliminating expenditures for advertising and for duplications of service which are now caused by the competition of rival lines. It is argued that public management would be more honest than private management, which also would, in a sense, reduce expenses.

3. Under private ownership, say the advocates of public ownership, the main, or the sole, object of the managements of the railways is to so run them as to earn the largest practicable net profits. Poor service costs less than good service; private companies, therefore, give the worst service that public sentiment and the regulating authorities will tolerate. The movement of freight is slow and uncertain, passenger trains are infrequent and relatively inferior, facilities are inadequate and congestions of traffic are common, numerous accidents are caused by the overworking of the too few men employed and by defects of

the physical plants, and new lines are built only where they are sure to pay. All of these things would be different under public ownership, because the managers of the public's railways would have no object but to give to the public the kind of service that its interests demanded.

4. The reductions in the cost of rendering the service of transportation, which its advocates believe would result from government ownership, would, if secured, make practicable reductions in freight and passenger rates.

5. "The leading argument in favor of state ownership and operation of railways," says Professor Johnson,⁶ "is that unjust discriminations between persons, places and commodities can thereby be prevented. It is reasonable to suppose that the government will manage the railroads with the same impartiality with which it conducts the Post Office. In a well-conducted government it is probable that favoritism will not exist, and that the government will tolerate only such discriminations as are in the public interest. When the government operates the railroads it can adjust charges with reference to the maximum development of industry and commerce, or with regard to the promotion of social progress."⁷

6. Under private management the profits of the railways belong to private capitalists, while under public ownership they would belong to the public, and could be used for the public benefit.

7. Under public ownership the public could improve the condition of the labor employed by the railways by reducing hours of work and increasing wages.

8. The financiers who dominate the railways and their officers and lobbyists often have exercised an unwhole-

⁶ "Elements of Transportation," by Emory R. Johnson, p. 154.

⁷ Professor Johnson adds "or with a view to increasing the strength and efficiency of the army." He doubtless had in view in writing this phrase the situation in Europe.

some influence on political parties, public administrative officials, law-making bodies and courts in the interest of the railway corporations. The only way, the advocates of government ownership contend, that this influence can be permanently removed from public affairs is by government management.

To the consideration of the points raised by the foregoing contentions the remaining chapters of this book will be devoted.

CHAPTER II

RELATIONS OF RAILWAYS TO THE STATE

IN Anglo-Saxon countries individual enterprise usually has led the way in industry. On the continent of Europe, the state has often done so, either by engaging in industry itself, or by giving subsidies or adopting protective measures to stimulate or supplement private initiative. It was natural, therefore, that the railways of England, the birth-place of railroad transportation, should be built without state aid. It was equally natural that in France, then the leading nation of continental Europe, they should be from the first the objects of government encouragement and the recipients of government subsidies. But the need for some form of railway regulation was as soon felt in England as in France. After "muddling along" for some years Parliament in 1844 passed an act creating a weak commission to enforce the few railway laws applying to railways then in effect. Railway development in France proceeded more slowly; but already, in 1842, there had been passed a law covering construction, operation and traffic. This law has been the basis of all later railway development and regulation in that country. As to the fundamental principle that the state should exercise some supervision over rail transportation, the statesmen and people of these two countries, with industrial organizations, forms of government and political ideals typifying so much that is different, were thus early agreed.

This is the only principle regarding the proper relations of railways to the state on which the French and

English agreed then, or on which there has been general agreement since. Among the opinions on this subject have been, first, that railways should be privately owned and operated, and regulated chiefly to maintain competition — in other words, treated much, but not exactly, as most private business concerns are; second, that they should be privately owned and operated, but recognized as monopolistic, and subjected to regulation of their rates and service; third, that they should be privately or publicly owned as in each case seems best, and that private lines should be given such subsidies as may be necessary to enable them to make such rates and give such service as the state may require, and should at the same time be subjected to regulation of all parts of their business; fourth, that all railways should be owned and operated by the state.

The trend of contemporary opinion and legislation decidedly favors the establishment of closer relations between railways and the state. In some countries, as in the United Kingdom and the United States, there has recently been an increase of public regulation. In others, as, for example, in Germany, Austria-Hungary, Italy, Switzerland, Belgium, and Japan, and to a smaller extent in France, government ownership and operation have been adopted.

Because a number of countries have adopted government ownership within the last half century, there is an impression that it has become the prevalent policy of the world, or at least that of most leading nations. The trend recently has been toward government ownership. But the railways owned by companies still greatly exceed those owned by governments in mileage. In 1910 the total railway mileage of the world was 639,621 miles. Of this 453,553 miles, or 70.9 per cent., was owned by companies, and 186,068 miles, or 29.1 per cent., by govern-

ments.¹ Most of the company owned mileage is in the United States, the mileage of this country being 241,056 miles in 1910, when the *Archiv für Eisenbahnwesen* made its most recent compilation of the world's railway mileage. But the privately-owned mileage outside the United States was 210,307 miles, or 22,049 miles greater than the total state-owned mileage. Some lines owned by companies are operated by governments, and some lines owned by governments are leased to companies; but the proportion of state-operated to company-operated mileage is about the same as the proportion of state-owned to company-owned mileage.²

Perhaps, also, it gives an incorrect impression to say that government ownership has been adopted by most leading countries. Germany has adopted it; but Great Britain adheres to private ownership. Most of the railways of Austria-Hungary are state-operated; but most of those of France are not. Most of the railways of Italy and Russia are state-operated; but in the principal country of South America, Argentina, with a mileage greater than that of Italy, and in Canada, with a large and rapidly increasing mileage, private ownership is greatly preponderant. Japan is committed to government ownership, but in the United States, with a mileage exceeding that of the combined state-owned railways of all the world, private management is the exclusive policy.

In Belgium, Finland, Denmark, Switzerland, Norway, Bulgaria, Servia, Roumania, Egypt, Honduras, Siam, Newfoundland, Australasia, Ceylon, Cape of Good Hope, Natal, Orange River Colony and the Transvaal, British East Africa, Northern and Southern Nigeria, Gold Coast,

¹ Based on figures in the *Archiv für Eisenbahnwesen*, May and June, 1912.

² The complete figures for state-owned and company-owned mileage are given in Appendix A.

Sierra Leone, the Federated Malay States, Jamaica and Mauritius, government ownership and operation are the preponderant policy. In Sweden, Portugal, Spain, Turkey, Greece, Algeria, Tunis, Brazil, Paraguay, Uruguay, Cuba, China, Rhodesia, and British Guiana private ownership and operation predominate. In Chile the mileages of the state and private lines are about the same. In Holland, most of the mileage is owned by the state, but all of it is operated by private companies. In Peru, as in Holland, most of the mileage is state-owned, but all is privately-managed. In India most of the mileage is state-owned, but most of it is operated by companies. In Mexico private companies built all the lines and still operate them, but the state has acquired a controlling part of the companies' stock. The railways of Nicaragua and Guatemala are state-owned; but they are leased to and operated by private companies.

The foregoing shows the diversity in the railway policies of different countries. There is often no want of variety in the same country. In only a few do public ownership and operation prevail exclusively; and, on the other hand, seldom have ownership and operation been remitted wholly to private hands. In some countries there is private operation of publicly-owned lines, in others public operation of privately-owned lines. Occasionally—in Austria, for example—there are found side by side public operation of state-owned lines, private operation of privately-owned lines, state operation of privately-owned lines, and private operation of state-owned lines.

United Kingdom.—The United Kingdom is the only important country whose railways have been developed practically without public aid. The railways of that country had 23,387 miles of line and a capitalization of \$6,421,170,080 in 1910; and the only state aid ever given them was in a few local cases in Ireland. They com-

monly had to incur enormous expenses to get their charters through Parliament, and to pay for land several times its value. It has been estimated that it has cost the British railways \$25,000 a mile to get their franchises from Parliament. To these things is largely due their very heavy capitalization, amounting to \$274,562 per mile. But from the first the wealth and enterprise of the people caused railway development to proceed rapidly. If the government did little to stimulate construction it imposed few requirements or restrictions on charges or operation. This was the *laissez-faire* era in England. Government and people thought that all that was needed to cause the railways to furnish good service at reasonable rates was to maintain competition. It was soon learned that competition could not be solely relied on, because it could not be completely maintained; and different bodies were from time to time given limited supervisory authority. In 1844 it was provided by Parliament³ that the state could acquire the railways for a sum equal to twenty-five years' purchase on the average divisible profits of the three years preceding purchase. This law is still in effect.⁴

In 1888 the Railway and Canal Traffic Act repealed or incorporated into itself all former laws for the regulation of railways and created a regulating commission of five members. Two of the members are appointive, one of whom must be a railway expert; and these participate in all proceedings whether in England, Ireland or Scotland. There are also three *ex officio* members, the Lord Chancellor, who presides in England; the Lord President of the Court of Session, who presides in Scotland; and the Lord Chancellor of Ireland, who presides in Ireland. Each of these sits only in his own country. The commission cannot initiate rates, but issues orders regarding

³ Seven and 8 Vict. C 85.

⁴ "The Nationalization of Railways," by Emil Davies, p. 113.

them which are practically final. In 1891-1892 Parliament fixed schedules of maximum rates. In 1894 it provided that the rates in force on December 31, 1892, should be deemed reasonable maxima except where the railways could show the contrary. This meant that they must prove that there had been an increase in the cost of handling the particular traffic on which it was proposed to raise the rates. The law was modified in 1913 so as to authorize the railways to make general advances in rates to cover certain general advances in wages. The regulation by the commission is supplemented by supervision of operation by the Board of Trade; and the investigations and reports of the Board's inspectors have done much to advance the safety of transportation.

The relations between railways and the state in Great Britain, it will be seen, have never been close. The managers of the roads have had great freedom of action. Attempts to compel competition were long ago abandoned. Parallel lines pool traffic or earnings, or even amalgamate, without government interference or much popular protest. No limitations have been put on profits except such as result indirectly from the regulation of rates. This combination of freedom of management and regulation by government has not given results wholly satisfactory to either the railway shareholders or the shippers. There is much talk of government ownership; and high authorities, among both the advocates and opponents of this policy, consider its adoption not wholly improbable.

France.—The railway policy of France has been in sharp contrast to that of England. In 1825-1837, while private capitalists were actively building railways in England, French government engineers were making surveys for an ideal system radiating from Paris to all parts of France, and the French Parliament was debating whether railways ought to be built by private companies or the

State.⁵ The concessions in France after 1833 always had a provision under which the roads could be taken over. The law of 1842 provided that the government should build the roadbed and structures; that local authorities should pay two-thirds and the State one-third of the cost of right-of-way; and that private companies should supply the rolling stock and operate the lines. In 1845 the State assumed the entire cost of right-of-way.

At the expiration of the concessions, which usually ran for 40 years, the roads were to become government property on payment for their rolling stock. There were to be nine large lines, seven radiating from Paris, the others to connect Bordeaux and Marseilles, and Mulheisen and Dijon. The French economists and statesmen considered railway transportation naturally monopolistic; and the government acted accordingly. Each line was laid out to serve a distinct territory. Government regulation was relied on for satisfactory service and rates; and public officials were given broad authority over construction, operation, rate-making and finances.

Construction went on rapidly until the revolution of 1848. It then stopped. After the accession of Napoleon III legislation was passed, in 1852, extending the charters of the companies for 99 years from that date. The renewed active building was arrested by the crisis of 1857. Consolidations had meantime reduced the number of companies to six, the lines of five radiating from Paris, those of the sixth being in the extreme South.

Industrial needs demanded the construction of a large branch mileage. The existing companies lacked sufficient incentive to build it. Under the policy of monopoly no company could invade another's territory; the business tributary to each flowed to it whether it built branches or

⁵ Hadley: "Railroad Transportation," p. 190; Charles Lee Raper: "Railway Transportation," p. 63.

not. They might have created new traffic by constructing branches, but they apparently feared, with the timidity of present prosperity and assured monopoly, that the additional expense might exceed the additional earnings. To secure the needed construction, the government in 1859 adopted a system of guarantees of interest. Each of the six great companies undertook the building of new mileage in its territory, and the State guaranteed four per cent. on the bonds issued for this purpose and a contribution to a sinking fund with which to pay the bonds off at maturity, making the government's total payments 4.65 per cent. The companies were allowed to pay dividends based on the averages paid during the preceding five years. Any excess earnings were to relieve the State of interest and sinking fund charges, or to repay it for advances. When the companies were no longer indebted to the government and no longer called on it for interest, they might increase their dividends. These conventions gave the large roads solid credit, and by 1870 the mileage of the country had practically doubled. Part of the new construction was done by small companies.

The Franco-Prussian War in 1870-1871 stopped construction. The government guarantees impaired the incentive of the large companies to enterprising management; and the new lines built by small companies became financially embarrassed. Germany, recently the conqueror, and now the hated rival, of France, was setting an example of state acquisition of railways. For industrial, financial, military and political reasons sentiment developed in France in favor of public ownership. In 1877-1878 the State bought the lines of ten small companies having 1,612 miles in the West and Southwest. De Freycinet, the prime minister, advocated state purchase of all lines and state construction of a large new mileage. An act was passed in 1879 for state construction of 5,500 miles

in the more remote and mountainous regions at an estimated cost of \$700,000,000. The programme was based on military and political, as much as on commercial and industrial, considerations. By 1882 the government, by purchase and construction, became owner of almost 10,000 miles.

Then a panic came, and the financial condition of the State system became bad. It was seen that it would cost at least \$1,300,000,000 to carry out the De Freycinet programme. Gambetta, the real force of the movement for nationalization, died in 1883. The movement then subsided and new conventions were made with the six big companies. These conventions provided for incorporation into the systems of the companies of 7,440 miles of the State lines. By this and other changes the State system was unified, restricted to a small territory in the Southwest, and reduced to about the mileage it had in 1877. Under the new conventions, the State was to build 700 miles and the six big companies 6,200. The distinction established in 1859 between old and new lines was abolished; and the government now guaranteed to the companies the dividends they had been accustomed to paying on all of their stock and the interest on the bonds already issued and on those to be issued for new construction. The roads might pay dividends somewhat higher than those guaranteed; and after they had become able to do so and had paid off their debts to the government, any excess earnings were to be divided, two-thirds going to the State and one-third to the railway. At the expirations of the conventions in 1950 to 1958 all the railways, unless some change be made in the arrangements entered into in 1883, will, without additional cost to the State, pass into its possession.

In fact, one of the large systems became its property in 1909. The Western Railway Company had long been

unprofitable. The State had made advances to it so large that it was thought they never could be repaid. In 1908 a bill providing for its acquisition was introduced in Parliament. The measure encountered strong opposition, especially from the Chambers of Commerce and the representatives in Parliament of the territory directly interested. After a threat by the prime minister, M. Clemenceau, that if the bill was not passed he would resign, it carried.⁶ In consequence, the State in 1910 owned 5,499 miles out of a total mileage in the country of 30,619 miles. The capitalization in 1909 of 25,017 miles was \$3,593,660,000, or \$143,648 a mile.

In 1906 the advances of the government to the five big companies which had not been repaid amounted to \$182,252,982. Of this \$63,931,915 had gone to the Western. There had also been advanced over \$18,000,000 to smaller companies. The following table⁷ gives the rates of dividend guaranteed under the conventions of 1883, the dividends actually paid and the dividends any earnings in excess of which must be divided with the State:

	Dividend Guaranteed by the State, per cent.	Dividend Paid, per cent.	Reserved Dividend Beyond which the State Participates, per cent.
Northern	13.15	18.	22.1
Eastern	7.1	7.1	10.1
Western	7.7	7.7	10.1
Orleans	11.2	11.8	14.4
Paris-Lyons-			
Mediterranean ...	11.	11.6	13.5
Southern	10.	10.	12.0

⁶ See an article "The State Railways of France," by M. Paul Le-roy-Beaulieu in the *Economiste*, Paris, Dec. 2, 1911. Republished in the *Railway Age Gazette*, May 10, 1912.

⁷ Based on information in the report to the British Board of Trade on "Railways in Belgium, France and Italy," pp. 141, 143, 144.

These guarantees expire, some in 1914, and one in 1934.

Not only have the financial relations between the State and the railways in France been very close, but the State has exercised the closest supervision over construction, operation and rate-making. The Public Works department operates the State lines; and it has a general council for bridges and roads, which advises the minister regarding plans of the State railways and of the companies for improvements and new construction; a commission for auditing railway accounts, which determines what payments shall be made by the State to the private railways and what by the private railways to the State with respect to the guarantees of interest; and a technical advisory council, composed of engineers, and including representatives of the Ministers of War and of Posts and Telegraphs, which is consulted regarding the running of trains, safety appliances, accidents, etc. The Minister of Public Works does not make rates, but the railways cannot make changes in them without his consent, which practically gives him the rate-making power. From the beginning there has been little that the railway managers have done or left undone without government consent, restraint, stimulus, or participation.

Germany.—To the student of the question of government versus private ownership no railways in the world are more interesting than those of Germany. In no other leading country has the policy of government ownership been more consistently carried out; nowhere else has government operation been so successful. As to the comparative degree of success attained there are differences of opinion. Many point to the German State railways, particularly those of Prussia, as the best-managed railways in the world. Many others find much in them to criticise, and contend that their service and rates are not as satis-

factory as those of some other railways. But all must agree that, whatever their exact comparative merits, the German State lines, and especially those of Prussia-Hesse, rank among the best-managed railways in the world.

The early construction in Germany was done by private enterprise. As early as 1838, however, Prussia recognized the possibility of public ownership. It provided that the State might guarantee the interest of railways, and that if advances were made by it, it might, after a certain time, assume the operation of the lines concerned.

After the panic and depression of 1845-48 Prussia took over a number of small roads that had become embarrassed. In the latter year it began building a military line from Berlin to the Russian frontier. But neither Prussia nor the other German states followed a consistent policy. Sometimes they built railways themselves; sometimes they subsidized or bought stock in private lines.

The great change in railway policy came after the Franco-Prussian War and the foundation of the German Empire. In Prussia a committee of investigation reported that "economic considerations point to the conclusion that all railways should be under the control of the State."⁸ The small German states now owned most of their railways; Prussia about one-third of hers. Bismarck wanted a unified system as a means of binding the empire together politically and strengthening its military position. The conflicts with Austria and France had impressed him with the advantages of such state control as would enable the central government, without intermediaries, to use the railways to convey troops promptly where they would be most effective. The power of the imperial government to regulate all railways, public or private, was broadly defined in the Imperial Constitution. But Bismarck

⁸ Board of Trade report on German railways, p. 1.

wanted the Empire to own and manage. A movement for transferring all the state railways to the Empire was defeated by Bavaria and Saxony. Bismarck then set out to acquire them for Prussia. In 1874 45 per cent. of the mileage in Germany was privately-owned. By 1882, in Prussia, where the bulk of the private lines had been, the government owned and operated 9,489 miles and operated 1,328 miles that were privately-owned; and there remained in that state a privately-operated mileage of only 2,387 miles. New construction was thenceforward carried on chiefly by the government. In 1895-97 Prussia acquired the Hessian railways, with 575 miles. In 1907 1,490 miles of the railways in Prussia were privately-operated and 22,041 miles state-operated. In 1910 the mileage of private lines in Germany was 2,193; the mileage of state lines, 34,547; and the total cost of construction, \$4,163,615,519, or \$113,324 per mile. While the law from the first empowered the Prussian State to compel the railway companies to sell to it, the transfers usually were brought about by friendly negotiations, and the prices paid were commonly based on current stock exchange quotations of the railways' securities.

Italy.—A well-informed American railway officer would not go to Italy to learn improved methods of operation. But Italian railway history may be reviewed with interest and profit by the student of the relations of railways to the state. Nowhere else have plans based on the results of the most thorough investigation been found to work so ill in practice; nowhere else has theory been so unceremoniously shouldered aside by conditions and opportunism.

There was no Italian nation when railway construction began. Italy was but a "geographical expression." When the kingdom was formed in 1860 there were 1,365 miles of disconnected lines, some owned by the states, some by

corporations. The new government in 1865 created four companies to which it sold the state lines and ceded the construction of new mileage. Provision was made for purchase by the State in 30 years of any line in the country which it might desire to buy.⁹

Curiously enough, the parallel and not the connecting lines were consolidated. Industry and commerce were still far from a stable basis; the way the lines had been combined prevented most of them from developing through business; and in a few years two had become unable to meet their obligations and had passed back into the control of the State. For political reasons the State also in 1875-1876 acquired from Austria the stock owned by it in the lines in upper and central Italy, and assumed its guarantee of their interest; and later it acquired the stock in these lines that was held by Austrian capitalists. Feeling was intense against Austria, from which Italy, in 1866, had wrested Venice; and the Italian government was anxious to free the railways of the country from the influence of foreign capitalists and governments, especially those of Austria and France, which had so long prevented the union of Italy.

Thus, although in 1865 private ownership had been adopted, in 1876 political and military motives and economic conditions had put in the hands of the State three-fifths of the mileage of 5,100 miles. To the Minister of Public Works was given the general administration of the railways. The direct management was turned over to a council composed of a president and six members. At the same time a parliamentary commission was created to investigate the question of private or public operation. This commission made the most thorough study ever given

⁹ Board of Trade report: "Railways in Belgium, France and Italy," p. 225.

to this subject.¹⁰ The oral testimony taken filled three large volumes. Three more were devoted to a digest of the written testimony received in reply to two hundred questions submitted to numerous persons of all classes in all parts of the country. A seventh contained the report and recommendations. The commission concluded (1) that services rendered by the state are usually not as efficiently or cheaply performed as those rendered by private concerns; (2) that, as to railways specifically, the operation of those managed by the state in different countries was more costly than the operation of those managed by private companies; (3) that when the state rendered a public service it was more apt to tax industry than to foster it; and (4) that public management was apt to have bad political consequences—that "politics would corrupt the railroad management, and the railroad management would corrupt politics."¹¹

While the commission was at work state operation in Italy was giving unsatisfactory results. Doubtless, this was as much due to the conditions as to the management. It was enough, however, together with the report of the commission, to cause Parliament to decide for private operation. The state roads were leased in 1885 to three companies, the Mediterranean, the Adriatic, and the Sicilian. Their respective lines, unlike those of the companies to which concessions had been made before, were connecting and extended the length of the country; and each company was given a monopoly in its territory. The concessions might run sixty years, but were terminable by either party at the end of every twenty years. A complicated arrangement was made for dividing earnings and

¹⁰ Hadley: "Railroad Transportation," p. 227; Raper: "Railway Transportation," p. 109.

¹¹ Hadley: "Railroad Transportation," p. 229.

expenses between the State and the companies.¹² The companies paid the State \$50,000,000 for the existing rolling stock. The government was to use this money for improvements and extensions, to pay the companies five per cent. interest on it, and to repurchase the rolling stock on the expiration or termination of the concessions. If the earnings exceeded certain fixed amounts the portions to be paid to the State were to be increased. The State was to continue to pay subsidies to the companies on lines already built by the latter, and on new lines that were to be built. All rates were to be approved by the government, which, indeed, was given broad and detailed powers of supervision.

The hope that this arrangement would solve the railway problem of Italy was not fulfilled. Instead of the anticipated increase of traffic there was a temporary decline. The rolling stock being found inadequate and the permanent way in bad condition, the government had to make large expenditures of money raised by taxation instead of from its expected share of the railway earnings. The companies, from want of ability in management or of sufficient opportunity or incentive, did not adequately develop and maintain the properties, and the service was very poor.

By 1905 both the companies and the public were disgusted with the whole arrangement. There had been a substantial growth of sentiment in favor of government ownership, and even of Socialism, and after but little consideration a bill was passed by Parliament restoring the roads to government management. The State bought the rolling stock of the three Northern companies—it al-

¹² For details regarding this interesting scheme see Hadley: "Railroad Transportation," p. 232; Raper: "Railway Transportation," p. 112; Board of Trade Report: "Railways in Belgium, France and Italy," p. 225.

ready owned the permanent way — and in 1907 it bought the lines of the Southern Company, which, although subsidized, had been privately owned and operated since 1865. Thus, after two deliberate decisions in favor of the principle of private operation, the State became the owner and manager of 8,246 miles of line out of a total in the country of about 10,300 miles. In 1910 the length of the Italian State railways was 8,810 miles and their cost of construction had been \$1,131,300,000, or \$128,410 per mile.

CHAPTER III

RELATIONS OF RAILWAYS TO THE STATE (*Continued*)

Belgium.—Belgium is a small country. It weighs but little in the political and economic balances of the world. Its total railway mileage is only about 3,000 miles. Yet its railway experience has been instructive. Few countries committed themselves so early, or have since committed themselves so entirely, to public ownership. Of the total mileage in 1909 about 90 per cent., or 2,678 miles, having a cost of \$491,185,000, or \$183,400 a mile, were state-owned and operated. But even Belgium has not always consistently adhered to state ownership.

When the railway era opened Belgium had just won its independence from Holland; and the good and wise King Leopold I hurried on construction by the State to keep certain hated Dutch capitalists from getting ahead of him.¹ The roads built followed the main lines of traffic, particularly between England and the Continent. Private companies were allowed to build where the State did not care to, and were aided by guarantees of interest. The State practically stopped construction in 1850; and by 1870 its lines had only 535² miles, while the private lines had 1,500 miles. Competition between the State and the companies became violent. "So far from exercising a dominant influence in railroad tariffs the State was for the time being completely powerless against the

¹ Hadley: "Railroad Transportation," p. 213.

² Board of Trade Report: "Railways in Belgium, France and Italy," p. 2.

current of events. It abandoned schedule rates, and had recourse to personal discrimination and special contracts of every kind. It is probable that in these respects the State was a worse offender than the private companies themselves."³ The government wished to use the railways to advance public policies. Private ownership of so large a mileage, with a great part of the stock in the hands of the Dutch and other foreigners, and competition between the private and state lines, made this impossible. Therefore, in 1871 the government began rapidly buying up the private lines. Fifteen years later it owned 75 per cent. of the total mileage of the country. Its last purchase, that of the West Flanders, was made in 1906.

Austria-Hungary.—In Austria the railway policy has been only less vacillating than in Italy. There, as in Italy, both public management and private management have been at one time adopted, and at another abandoned, as a matter of public policy; but the people and statesmen—unlike those of Italy—have never thoroughly investigated the comparative merits of the two systems.

When railways were invented the Austrian bureaucrats regarded them with suspicion. "Such rapid movement," says Dr. Hadley, "seemed to savor of radicalism, not to say revolution. The emperor in 1836 made up his mind to sign a railroad charter only on the somewhat dubious ground that 'the thing can't maintain itself, anyhow.'"⁴ But the attitude of the authorities changed. Soon the government was not only subsidizing railways, but building them. By 1845 almost half the mileage in the country was state-operated. The revolution of 1848 and the Hungarian war crippled the government financially; and France was setting the example of encourag-

³ Hadley: "Railroad Transportation," p. 214.

⁴ "Railroad Transportation," p. 200.

ing private construction and operation. Influenced by the conditions prevailing at home, and the theory prevailing in France, the Austrian government began disposing of its railways to private companies at bargain prices. Some were sold at half their cost; and by 1875, out of a mileage of 6,405 miles the State operated only 71 miles, or 1.11 per cent.

This change did not have the desired effect of kindling private enterprise. A restrictive and paternalistic policy had been followed so long that there was little private enterprise to kindle. Austria's defeats in the wars with France in 1859 and Prussia in 1866 were largely due to the undeveloped condition of her railways. The pendulum of opinion among her statesmen began to swing back in favor of government ownership. After the war with Germany there was a period of wild railway speculation. The panic of 1873 threw many lines into bankruptcy. The government—emulating now Germany's policy of state acquisition, as it had formerly imitated France's policy of disposition to companies—began buying existing lines and building new ones—a course since consistently, although not vigorously, followed. In 1906 out of a total of 13,400 miles in the country about 6,210 were owned and worked by the State and 3,045 were owned by private companies and worked by the State, while 30 miles of state-owned lines were leased to foreign countries and private companies, and 4,260 miles were both owned and operated by private companies. In other words, about 68 per cent. of the total mileage was then government-managed. The State has since acquired the Northern. The total mileage in the country in 1910 was 13,873 and its capitalization (or cost of construction), \$1,609,853,523, or \$116,042 per mile.

In Hungary, as in Austria, private construction and ownership, encouraged by state guarantees of interest, was

long the dominant policy. "But the burden thrown on the State through guarantees had a great influence in the direction of nationalization, which has made such progress that to-day in Hungary, even more than in Austria, we find the state system paramount."⁵ At the end of 1906 the state-owned and operated mileage was about 5,000 and the private mileage worked by the State about 5,000, a total state-operated mileage of 10,000 miles; while the privately-owned and operated mileage was but 2,100 miles. The total length of lines in Hungary in 1910 was 12,562 miles; the total capitalization, \$814,534,000, or \$64,841 per mile.

No two countries in Europe differ more politically and geographically than Russia, with its great steppes and its autocracy tempered by assassination, and democratic, mountainous Switzerland. Yet government ownership is preponderant in both.

Russia.—Where the bureaucracy is everything and the citizen nothing, we should not expect to find the railways in private hands. Yet, in fact, many of the railways of Russia have been built by private capital. Most of these, however, have been transferred to the State. On January 1, 1910, the length of the lines belonging to and worked by the government was 33,027 miles, and that of the lines belonging to companies was 10,474 miles. This does not include about 1,450 miles of short local lines. In 1906 the cost of construction of the railways of European Russia, exclusive of Finland, was estimated at \$4,726,000,000, or \$137,000 per mile for the state railways, and \$108,000 per mile for those of the companies.⁶ The cost of the railways of Asiatic Russia had been \$336,650,000, or \$65,000 per mile.

⁵ Board of Trade Report: "Railways in Austria Hungary," p. 3.

⁶ The Statesman's Year Book, 1911, p. 1182.

Switzerland.—Switzerland affords one of the most notable examples of the last quarter-century of a country committing itself decisively to public ownership and operation. The railways were originally built by private companies. But the possibility of state ownership was contemplated from the first. As early as 1851 a law was passed providing that those who erected public works under legislation by the Federation should be bound to cede them at any time for full compensation. At about the same time a plan was considered for the construction and operation of a state system of railways jointly by the Federation and the cantons. This (in 1852) the national legislature rejected, and passed a law authorizing construction and operation by companies. "In a few years there came into existence an extensive network of railways which overspread nearly the whole country and which was more dense than the system of state roads the Federation had originally projected."⁷ But the advocacy of state ownership was continued by influential men. Stampfli, when President of the Federation in 1862, published an able pamphlet favoring it. The sentiment for public ownership was kept alive by the inability of the Federation effectively to control the railways because of its limited legal powers, and the inability of the individual cantons to do so because, individually, they were small and weak. But when the charters of a number of railways expired in 1883 the government decided against acquiring them.

However, various forces were working for the adoption of state ownership. The example of a number of countries that were acquiring railways, including Belgium, Prussia, Austria and Hungary, attracted attention. "Men had begun to reconcile themselves to the inter-

⁷ "Nationalization of Swiss Railways," by Hans Dietler, translated from the German by B. H. Meyer and printed in publications of the American Academy of Political and Social Science, May 2, 1890.

ference of the State in all spheres of national life."⁸ The private managements of the railways were slow in simplifying and unifying their traffic and operating arrangements. "Fear of the influence of foreign countries on Swiss railway affairs, because foreign capital had been largely employed in the construction and maintenance of the Swiss roads, has always influenced the railway politics of Switzerland, and helped to create a sentiment in favor of railway nationalization."⁹ Apparently the foreign stockholders were in control in three of the leading companies, and such control, in the opinion of the Federal Council, was politically dangerous. Even the sentiment of anti-Semitism was played on, a large part of the stock being held by foreigners who were also Jews.

At last, on February 29, 1898, a referendum on the question of the purchase of the railways by the Federation was taken. The Federal Council issued a statement indicating to railway employes that if state ownership prevailed the highest wages then paid on any railway in the country would be made standard on all and to shippers and travelers that the lowest rates then obtaining on any line would be made standard on all. It contended that consolidation under state management would result in saving the "fancy" salaries of the officers of the companies, in better arrangements for handling through traffic, in better local service, in the reduction of fixed charges by the substitution of the government's credit for that of private concerns, and in the abolition of discrimination. These arguments, together with the already extensive sentiment in favor of state participation in many affairs, and the appeal for the people to show their patriotism by removing

⁸ Dietler: "Nationalization of Swiss Railways," p. 33.

⁹ Dietler, *Ibid.*

the railways from foreign influence, were decisive.¹⁰ About 79 per cent. of the total qualified electors voted; and 386,634 favored public ownership, and 182,718 opposed it. The purchase of the lines of the various companies was speedily begun, and in 1909 the St. Gothard, the last of the five large roads, was acquired. The total railway mileage in the country in 1910 was 3,131 miles, and the cost of construction up to the end of 1909 had been \$362,192,000.

Australasia.—For some years Australasia has been the leading economic and social experiment station of the world. Nowhere has public ownership of public utilities been more consistently carried out. Yet the early settlers of Australasia had the traditional Anglo-Saxon predilection for private enterprise. The original proposals for the construction of railways in New South Wales were made by private companies in 1850. The building of two lines from Sydney and Newcastle was authorized. But not till four years later did construction begin, and the companies soon became embarrassed. The private capital of the country was absorbed in the development of gold mines.¹¹ If railways were to be built at all English capital must be obtained. To get it the public credit must be pledged. The government assumed the liabilities of the companies, paid the expenses incurred on lines under

¹⁰ "There was some appeal to the national pride, which ought to insist upon the popular management of those affairs which are of prime importance to the well-being of the commonwealth, and to the national prejudice, which ought not to tolerate the threatened domination of Swiss domestic commerce by aliens."—"The First Decade of the Swiss Federal Railways," by A. N. Holcombe, *Quarterly Journal of Economics*, Feb., 1912, p. 345.

¹¹ W. M. Acworth, address on "The Relations of Railroads to the State" before the British Association for the Advancement of Science at Dublin, Ireland, Sept. 2, 1908. Published in *Railroad Age Gazette*, Sept. 18, 1908, p. 955.

construction, and completed them. The original section from Sydney to Paramatta, 14 miles, was opened in 1855. All the main lines in New South Wales have since been built and operated by the state.

Similar conditions caused like action in the other colonies; and government ownership has ever since been the policy of Australasia, including New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia, and New Zealand. Railways have been built in a few cases by private capital and later acquired by the state; but usually they have been built by the governments. The total mileage of the railways of Australia on June 30, 1911, was 16,078 miles; their capitalization (or cost of construction), \$745,416,745, or \$46,363 per mile.¹²

Canada.—Strikingly different from the railway history of Australasia has been that of Canada, the largest and most populous of the self-governing British possessions. On June 30, 1912, the total length of lines operated in Canada was 26,727 miles. Of this, 2,092 miles, with a capital cost of \$123,036,218, were owned and operated by the government while 24,635 miles, with a gross capitalization of \$1,588,937,526, were owned and operated by private companies.¹³

As will be seen the Dominion has engaged to some extent in state ownership. This originated chiefly in political conditions. The act of the English Parliament creating the Dominion was passed in 1867; and one of the measures adopted for better binding the Eastern provinces together was a law authorizing public construction of a railway from Port Rivier du Loup, in the Province

¹² Statesman's Year Book, 1912, p. 289.

¹³ Railway Statistics of the Dominion of Canada, 1912, issued by the Department of Railways and Canals.

of Quebec, to Truro, to be called the "Intercolonial Railway." This road has ever since been owned, developed and operated by the Dominion. In 1912 it had a mileage of 1,463 miles and a capital cost of \$94,746,391 or \$64,761 per mile. Other government-owned and operated railways are the Prince Edward Island, the Temiskaming and Northern Ontario, and the New Brunswick C. and Ry.¹⁴

In the main, however, the policy of the Canadian government has been to encourage the development of railways by private companies. The encouragement has taken the form of land grants, cash subsidies and guarantees of interest. The total land grants up to June 30, 1912, had been 56,052,055 acres. The total cash subsidies had been \$208,072,073. The bonds on which interest had been guaranteed aggregated \$245,070,045; of which the interest on \$91,983,553 had been guaranteed by the Dominion, and that on the rest by the provinces.¹⁵

The private railways of Canada are subjected to strict regulation by the Railway and Canal Commission, but this is not so detailed or rigorous as the control that has been exercised in most other countries where subsidies have been given and guarantees of interest made, as, for example, in France and Italy.

Japan.—The history of railways in Japan begins at a later date than, but is not unlike, that of the railways of several European countries. The first line was opened by the State in 1873, and in 1885 it owned most of the

¹⁴ The mileages and capitalizations of these lines in 1911 were: Prince Edward Island, capital cost \$8,599,685, cost per mile \$31,820; Temiskaming & Northern Ontario, mileage 295, capital cost \$16,181,835, cost per mile, \$54,854; New Brunswick C. & Ry., mileage 58, capital \$1,936,600.

¹⁵ Railway Statistics of the Dominion of Canada for the year ending June 30, 1912.

mileage. The first privately-owned line was not completed until 1891, but after that private construction proceeded so fast that in 1895 the privately controlled mileage trebled the state mileage. After this, state construction went on more rapidly in proportion, so that in 1907, when the government acquired the private mileage the state mileage was one-third of the total and the private mileage two-thirds. The government paid for the private lines and their subsidiary businesses \$237,100,453, and in 1910 it owned in Japan proper 4,879 miles which were open for traffic and which had cost \$303,978,420, or \$62,303.43 per mile, and there were in the hands of private companies 506 miles, representing a capital investment of \$22,729,947.84, or \$44,920.84 per mile.¹⁶

India.—In India, for military and economic reasons, the British government greatly desired to develop a large railway mileage; but it did not wish to own and operate it. The result has been the adoption of more different forms of compromise than probably have obtained in any other country. While most of the mileage is owned either by the British government or by the native states, and most of that owned by companies has been subsidized, there was operated by companies at the end of 1910 21,690 miles out of a total of 29,805 miles.¹⁷ The statement in a note¹⁸ which sets forth the numerous ways in which the

¹⁶ Robert P. Porter: "The Full Recognition of Japan."

¹⁷ See Administration Report on the Railways in India, for the Calendar Year 1910, by the Railway Board, p. 18.

¹⁸ State line worked by the government	6,676.55 miles
State line worked by companies	17,788.64 "
Companies' lines guaranteed by the state under modern contracts	32.04 "
Leased lines	79.19 "
District boards' lines	155.16 "
Branch lines companies' railways assisted by government under "rebate" terms	1,139.05 "

lines of the country are owned, subsidized and operated, will give some idea of the variety of methods that can be employed in a country where private capital and enterprise are insufficient to develop the railways, and the government is indisposed to own and operate them. The capital outlay on all lines operated up to the close of 1910 had been \$142,251,325.20, an average of \$44,316.02 per mile.¹⁹

Under the contracts first made with the companies the Indian government guaranteed five per cent. on their capital and divided profits exceeding this at the end of each half-year. Under this arrangement railways which saw no prospect of earning surplus profits had little inducement to economy, since a dividend of five per cent. was assured, anyway; and railways which did a larger business in one half-year than in the other, and saw a prospect of surplus profits in the one half and not in the other, had an incentive to increase their expenditures in

Assisted companies' lines subsidized by the government of India	394.19 miles
Assisted companies' lines subsidized by local governments	137.02 "
Assisted companies' lines subsidized by district boards	199.24 "
Assisted companies' lines receiving land only from government	1,534.24 "
Unassisted companies' lines	38.77 "
Native-state lines worked by native states	1,561.94 "
Native-state lines worked by companies	2,055.51 "
Native-state lines worked by state railway agency ..	234.16 "
Lines in foreign territory	73.60 "
Total	32,099.30 miles

¹⁹ Up to the end of March, 1911, the length of lines open was 32,399 miles; of lines under construction or sanctioned for construction, 2,765 miles; and up to the end of 1910 the total capital liability that had been assumed by the government in the purchase, construction and subsidizing of the railways, aggregated \$1,605,792,600.

the bad half-year and to curb them in the good half-year, so as to get the benefit of the surplus profits in the one half and the benefit of the guarantee in the other. In 1896 the government adopted another arrangement for new railroad projects under which a company could build approved branch lines and pay interest on its capital during the construction period and was allowed a division of rates up to the full extent of the net earnings of the main line from traffic interchanged with the branch to so increase its own earnings as to permit a dividend of 3.5 per cent. on its capital. A few railways were built under the new terms, but the government allowed the companies to undertake only the projects which were the least promising, and found it very hard to interest private capital in railway projects without some form of guarantee.²⁰

In 1903 Thomas Robertson, C. V. O., Special Commissioner for Indian Railways, made a report to the British Parliament on the railway situation in India. He complained that funds for capital expenditures by railways for which the government had financial responsibility were apportioned at the beginning of the year. As the total amount to be expended depended on the state of the treasury, on the money market and on general conditions no road could tell how much it was going to receive. As all unspent balances lapsed at the end of the year a road which had been unable to carry out its plans as fast as had been anticipated often found that funds that it needed were diverted to some other road. Mr. Robertson made numerous objections to state railroad management in India and recommended that the government should lease all of its railways to private companies.

United States.—In no other leading country except the United Kingdom has there been so little railway develop-

²⁰ "Railroad Administration," by Ray Morris, pp. 167-177.

ment by government as in the United States. Nowhere else, except in the United Kingdom, have private companies been given so little state aid. Nowhere else, until recent years, was there so little regulation of railways. And nowhere else has railway development been so rapid or attained such magnitude. On June 30, 1910, the length of line operated in this country was 240,831 miles.²¹ This compares with a mileage of about 195,000 in all Europe. The capitalization of the 228,841 miles for which the Interstate Commerce Commission gave capitalization figures was \$14,338,575,940, or \$62,657 a mile,²² as compared with \$23,329,194,259 for a European mileage of 192,462 miles, or \$121,214 per mile.²³

The United Kingdom and the United States are the only leading countries of the world, and, indeed almost the only ones of any importance, in which the amount of public ownership and operation is almost negligible. The federal government owns the Panama Railroad, but it is only about 50 miles long, and is not situated within the United States. The State of Texas owns a little railway, the Texas State Railroad, thirty-three miles long, which is operated in connection with the state penitentiary. The City of Cincinnati owns the Cincinnati Southern, but it has been leased to a private company ever since its construction. The State of Georgia owns the Western & Atlantic, and the State of North Carolina owns \$1,266,500 of the \$1,800,000 capital stock of the Atlantic & North Carolina.

²¹ "Statistics of Railways in the United States, 1910," Interstate Commerce Commission.

²² "Statistics of Railways in the United States, 1910," Interstate Commerce Commission.

²³ "Railway Statistics of the United States of America, for the year ending June 30, 1911, compared with the Official Reports for 1910 and Recent Statistics of Foreign Railways," by Slason Thompson.

The interests of Georgia and North Carolina in these railways are relics of a period when several states participated in railway construction. In 1836 Indiana appropriated \$1,300,000 for the Madison & Lafayette, but in six years only 28 miles had been built, and the legislature turned the railway over to a private company to finish. After a year of unprofitable operation the property was given outright to the company at a net loss to the State of over \$1,500,000. The Western & Atlantic, with 137 miles, was built by Georgia between 1841 and 1850, and operated by it for a time, but annual deficits of \$60,000 to \$100,000 caused the State to retire from the railway business. The road was leased in 1890 to the Nashville, Chattanooga & St. Louis, a private company, for 29 years, at a rental of \$120,012 per annum, to be paid in monthly installments. The line has since been operated with profit both to the lessor State and the lessee company.

The State which probably had the most costly experience with railways in their early history was Missouri. It made advances to seven lines, the principal of which amounted to \$26,700,000. Including interest, the advances amounted to \$31,735,000. The only road which ever repaid the advances made to it was the Hannibal & St. Joseph, now a part of the Chicago, Burlington & Quincy. It returned the \$3,000,000 loaned to it, with interest, in 1883. When, after many defaults, the State seized the other roads, or ordered them sold, the total amount realized was only \$6,131,000, leaving a net loss to it of \$22,604,000.²⁴ In reporting the sale of the Pacific Railroad the State's committee said that the cost of the sale was about \$200,000, and in addition, "an

²⁴ "The processes by which the roads were sold were among the most scandalous in the history of legislation in this country. For instance, the St. Louis & Iron Mountain and the Cairo & Fulton were sold to McCay, Read & Company for \$900,000, although several bids

amount of labor, pain, mortification and degradation which this or any other company can never adequately compensate." These railways, which cost the State and its committee so much money, "mortification and degradation," are now parts of the Missouri Pacific, the St. Louis & San Francisco and the St. Louis, Iron Mountain & Southern.

The State of Pennsylvania was one of the pioneer railroad builders and managers of this country. It opened the Philadelphia & Columbia Railroad in 1834. For the first ten years both steam and horse power were used. In 1844 the privilege allowed shippers of using their own horse power was abolished. Then followed ten years of competition with other transportation lines, notably the Pennsylvania Railroad. This ended about 1855 with the sale of the state railroad to the Pennsylvania for \$7,500,000—"about twice what it was worth and about one-fourth of what it cost the State." "After more than twenty years of hard experience the State of Pennsylvania grimly pocketed its loss of over \$20,000,000 and turned its back forever on the gospel of state ownership of railroads."²⁵

of over \$1,000,000 were put in. The firm turned around and sold the roads at a profit of over \$300,000 to one of the other bidders. General Fremont bought the Southwest Branch Railroad for \$1,300,000, and immediately offered it for sale for \$220,000. He did not get a bidder, and sold it shortly afterward at a profit of \$100. The buyer went into bankruptcy. The largest advances were to the Pacific Railroad. This company owed the state about \$10,800,000. The value of the property was supposed to be about \$10,000,000, and the Union Pacific was said to have offered more than that for the road. It was finally sold in 1868 for \$5,000,000, and the state debt was cancelled."²⁵—State Ownership of Railroads in Missouri and Pennsylvania," by C. M. Keys, *World's Work*, Dec, 1906.

²⁵ "State Ownership of Railroads in Missouri and Pennsylvania," by C. M. Keys, *World's Work*, Dec, 1906.

North Carolina in the early history of railways actively participated in their construction. The North Carolina Railroad was incorporated in 1849, the State subscribing to a large majority of the stock. The road was built from Goldsboro to Charlotte, 223 miles, and was operated for a time by the State. Unfortunately, it was surveyed, not with a view to the industrial needs or traffic possibilities of the territory to be traversed, but in order that it might touch the domiciles of the presiding officer of the General Assembly, the Governor of the State, a United States Senator and other distinguished men. In consequence, it had the shape of a horseshoe, and was not profitable under state management.²⁶ In 1871 the road was leased to the Richmond & Danville Railroad Company, and it is now leased to the Southern Railway.

When the Atlantic & North Carolina Railroad was built, the State of North Carolina took 12,000 of its 18,000 shares of stock, appointed a majority of the directors and had absolute control. It was operated by the state "for nearly half a century, in war and peace, by Democrats, by Republicans and by Fusionists — each with varying degrees of failure." The private stockholders for years "pleaded for a lease or for anything to avoid a continuance of political mismanagement." Finally, a few years ago the road was leased to the Norfolk Southern Railroad. "The State of North Carolina aided in various ways in the construction of the Wilmington & Weldon, the Raleigh & Gaston, the Raleigh & Augusta Air Line, the Wilmington, Columbia & Augusta, the Western North Carolina, the Cape Fear & Yadkin Valley, and several other roads, but experience followed experience, each a protest against state management and control, until North

²⁶ "State Ownership in North Carolina," by T. B. Womack, formerly a Judge of the Supreme Court of North Carolina. *World's Work*, Dec., 1906.

Carolina disposed of or lost all of its railroad properties except its stock in the North Carolina Railroad and in the Atlantic & North Carolina Railroad. . . . Practically the entire funded debt of the State, something over \$6,000,000, originally arose out of the plans for internal improvements."²⁷

Other examples of government experiments with railway construction and ownership in this country might be recalled. Practically all had unfortunate financial results. The nation, the states and the municipalities soon turned entirely from furthering railway development by actual construction to stimulating it by subsidies in the form of cash, of guarantees of interest, or of grants of land. During the ten years ending with 1871 Congress granted to 23 companies 159,000,000 acres. Because of the inability of some to comply with the conditions imposed only about 110,000,000 acres have actually come into their possession. Much of this land is valuable now, but when given it was worth but little. The national government advanced to the companies which built the first line to the Pacific Ocean \$64,623,512, practically all of which was paid back. Subsidies of various kinds were also given by states, counties and municipalities. The total value of the subsidies was, for that time, very large. Compared with the total investment which has been made in railways in the United States it is not great. That the subsidies helped stimulate railway construction there can be no question. In the decade from 1880 to 1890, 70,000 miles of line were built. This exceeds the present total railway mileage of any other country.

The railways of the United States were quite free from public control in their early history. Various abuses de-

²⁷ "State Ownership in North Carolina," by T. B. Womack, formerly a Judge of the Supreme Court of North Carolina. *World's Work*, Dec., 1906.

veloped, the worst of which were dishonest financing and unfair discriminations in rates. The Granger agitation of the seventies caused the enactment of a number of laws to regulate rates and to create state railway commissions. In 1887 Congress passed the Act to Regulate Commerce, forbidding the pooling of the earnings or traffic of competing railways, unfair discrimination in rates, rebating and the charging of excessive rates, and creating the Interstate Commerce Commission to enforce the provisions of the law. The Hepburn Act of 1906 gave the Commission authority to substitute reasonable maximum rates for those it found excessive and prescribe a uniform system of accounting. The Mann-Elkins Act of 1910 gave it authority to prevent proposed advances in rates which it found unreasonable. Before and since there had, and has been, legislation by the state or national governments, or both, fixing maximum passenger and freight rates and regulating safety appliances, the hours of service of employes, the number of men in train crews, and many other features of management and operation. Almost all of the states have created railway or public utility commissions with broad powers of supervision; and there is hardly a feature of railway operation that is not now subjected to state or national regulation, or both.

CHAPTER IV

CAUSES OF GOVERNMENT OWNERSHIP

THOSE who have read the preceding chapters must have been impressed with the facts, that from the beginning of railway history the relations between railways and the State in most other countries have been widely different from what they have been in the United States, and that where government ownership now obtains the conditions preceding and surrounding its adoption were unlike the past and present conditions here.

In the United States legislation has not contemplated public acquisition of the railways. Their franchises have been granted in perpetuity. In many other leading countries, as we have seen, laws early were passed looking to state purchase. After 1833 all concessions granted in France contained provisions under which the projected lines could be taken over by the government. Prussia provided in 1838 that the State might, after a certain time, acquire and operate railways whose interest it guaranteed. Even Great Britain, as early as 1844, fixed by law the terms under which the railroads could be bought. With the specific idea of government acquisition of the railways, Switzerland in 1851 provided that those who built public works under legislation by the Federation should be bound to cede them at any time for full compensation. When the Kingdom of Italy in 1865 first disposed of its railways to companies it kept an option for their repurchase. While in the United States practically from the first private ownership and management were considered the nat-

ural policy, in many other countries public ownership was thus regarded. Where a given policy is looked on as natural and its adoption as possible or probable it is more likely to be adopted than where this is not the case. Human nature gravitates toward the courses that are deemed natural and suitable, unless something checks the tendency.

Doubtless the cause of this attitude of the statesmen and people of many countries was that they had been used to seeing their governments take an active and leading part in industry and commerce, either by fostering or restrictive regulation, or by carrying on commercial or industrial enterprises. Active participation by the organized people through their government in industry and commerce necessarily limits the industrial and commercial initiative and opportunities of individuals. Therefore, we find that in many of the countries where provision was early made for state purchase provision also was early made for giving state subsidies in aid of railway construction. It is, perhaps, significant that after the French Parliament had in 1838 rejected a bill of the government for the construction of seven great trunk lines to be operated by the State it was an Englishman, Mr. (afterwards Sir) Edward Blount, established in Paris as a banker, who came forward and proposed to the Minister of Public Works that he would raise in England funds to build a line from Paris to Rouen if the government would grant him a concession. The Minister replied that if Mr. Blount would raise £600,000 in England and a like amount in France the French government would advance him another £600,000 at 3 per cent. Mr. Blount accepted, and in July, 1840, was granted the concession for the Western Railway. The contract for its construction was let to Thomas Brassey, also an Englishman. He took with him to France a body of British navvies to help with the work. Thus England, the home of private enterprise, furnished the promoter,

the builder, part of the labor, and a third of the capital for one of the earliest railway ventures in France; the French government advanced another third of the capital; and only one-third was provided by Frenchmen.¹ Although most of the railways of France are privately operated, a large part of the capital for their development has ever since been furnished, directly or indirectly, by the State.

Likewise, Prussia and the other German states, Italy, Austria-Hungary, British India, Canada, and many other countries have aided private companies by guaranteeing the interest on their bonds or dividends on their stock, or by buying their securities. In the early railway history of the United States, subsidies were given here, but most of them were outright donations. The land grants made became absolute when the mileage on whose construction they were contingent had been built. Where the state or local governments acquired securities they usually disposed of them soon to the best advantage that they could. The cash advances of the federal government to the companies that built the Pacifics were after a long time practically all paid back. In other words, the direct financial relationships formed between the railways and the national, state and local governments in the United States were not only meant to be temporary, but usually were soon entirely terminated. On the contrary, many European governments assumed and retained something like the relationship of the holder of a first mortgage on many railways which was so large that it covered a great, and perhaps the greater, part of the investment.

The result in the United States was that when railways became financially embarrassed, as many of them did, they went through receiverships which left them in the hands

¹ "Railways and Their Rates," by Edwin A. Pratt, p. 206.

of the private capitalists who had controlled them, or transferred them to other private capitalists, while the subsidy policy of Europe has in many cases had a direct causal connection with the adoption of government ownership. It was largely because of their financial embarrassments, and because the State was one of their principal creditors, that ten small companies in France were taken over by the government in 1877-78. It was mainly because its debt to the State had become very great that the Western Railway of France was taken over in 1908. It was after the panic and depression of 1845-48, when roads for which it had made guarantees of interest became financially embarrassed, that Prussia acquired a number of small roads and began operating them.

The financial relations between the railways and the State played an important part in twice causing a return to government operation in Italy. The kingdom of Italy, which inherited a confused network of railroads from the different states into which the country had been divided, sold them in 1865 to four companies. The roads were unable to meet their obligations to the State, and in a short time were back in its hands. After another trial of private management it was again chiefly owing to financial reasons that the lines were once more returned to the State in 1905. In Austria the subsidy policy was followed, and the panic of 1873, by bankrupting many lines and throwing them on the support of a paternal government, marked the turning point in Austrian railway policy. Previously the State had preferred to dispose of its own railways to private capitalists. The British Board of Trade report, as we have seen, attributes to "the burden thrown upon the state through guarantees a great influence in the direction of nationalization" in Hungary.

The beginning of government ownership in Australia was owing to a cause not wholly dissimilar. It was due,

not to want of private enterprise, but to the fact that just when the need for railways became imperative the available private enterprise and capital turned to gold mining instead of to railway building. In India the British government became a builder, owner and manager of railways reluctantly. If they were to be adequately provided it must be by the government.

Another important point is that in several countries the governments were themselves among the first railway builders. When, owing to any cause, a government already has railways, this fact, especially if it has met with some success with them, creates a tendency for it to acquire the lines of private companies. King Leopold built the first railways in Belgium, and it was the intolerable competition of the private with the state lines which many years later caused the Belgian government to begin acquiring the former. In Prussia the first state railway was built as long ago as 1848. The various Italian states began railway construction on their own account about the same time. The Austrian and Hungarian governments have built and managed railways since the beginning of railway history. The first railway in Japan was built by the State, and its recent acquisition of the privately-owned mileage was hardly so much a revolutionary change of policy as merely the addition of the relatively large privately owned net to the already existing state lines.

Political and military motives also have played an important part. In Belgium it was fear of the hated capitalists of Holland from which his country had only recently been separated, that first stimulated King Leopold to begin railway construction. One of the most effective arguments used for the adoption of government ownership in Switzerland was that a large part of the stock of the railways was owned by foreigners, and that this involved political and military dangers for the Republic. State

purchase was urged by Bismarck in Germany as a means of binding the parts of the new Empire together and making the entire railway system available for military purposes on a moment's notice.² Similar motives, and the example being set by Germany, stimulated France to acquire the several small railways taken over in 1877-78, and the government of Austria to push forward a policy of state acquisition. Political and military reasons also at about the same time influenced Italy to acquire from the Austrian government and Austrian capitalists their stock in the railways of upper Italy. It was almost solely to bind more closely together the French and English provinces that Canada acquired and built the different parts of the Intercolonial. The government of Mexico is understood to have bought a majority of the stock of the railways of that country because much of it was owned in the United States, and it was believed that some American railway "magnates" were seeking to get control of the Mexican lines and make them an appendage of one or more of the large systems in the United States. This, it was feared, might cause international complications.

Strictly economic reasoning, as distinguished from economic conditions, also usually has played a part in bringing about state ownership. In Switzerland one of the most effective arguments was that public ownership would lead to reductions in passenger and freight rates and in-

² "The Belgians and the Swiss, for instance, adopted state management because they feared the domination of foreign capital. The Australians because capital could only be obtained on the credit of the state. The Italians, as the only way of ending the inextricable tangle of relationship between the State and its lessees. The Germans (Bismarck originally intended the purchase of the north German railways to be carried out, not by the Kingdom of Prussia, but by the German Empire) partly for strategic reasons, partly in pursuit of a policy of unification."—W. M. Acworth: "Studies in Railway Economics," *Railway Age Gazette*, Jan. 13, 1911, p. 75.

creases in wages. Bismarck and his supporters indicated that after state acquisition in Germany the net earnings of the railways would first be used to pay interest and to liquidate the railway debt, after which the aim would be barely to earn working expenses. Excess receipts would be wiped out by reductions in freight and passenger rates. This policy has not been carried out. Capital for extensions and for most of the improvements has been raised by increasing the railway debt. Most of the earnings over operating expenses and interest have been used to pay current expenses of the government. This has provoked the charge that Bismarck's true idea from the start was to acquire the railways in order to put their profits at the disposal of the government, and free it from the embarrassment of appealing to the lawmakers for taxes to carry out policies with which they were not in sympathy.

While, however, arguments based on economic grounds often have been factors in bringing about government ownership, probably in very few countries would they alone have brought it out. Where the most exhaustive study of the question from an economic standpoint was made, viz., in Italy, the decision was against government ownership.

Now, as has been indicated, there are no laws in the United States providing the means of state purchase. There do not exist any financial relations between the railways and the state and national governments that have any tendency to lead to government ownership. There are no state-owned railways with which the privately-owned railways compete, as there have been in most countries where government ownership has finally prevailed. Not enough of the stock and bonds of our railways is held abroad to enable foreigners to exercise any considerable influence over their management. There does not appear to be any necessity for the public to subsidize or engage in

the construction of railways to provide a sufficient mileage; railway development under private ownership has gone on faster in the United States than in any other country, except, in recent years, in Canada. There is no such political condition to argue for public ownership as the need for binding together different and widely separated sections of the country. There is no need for the central government to have absolute control of the railways for military reasons; the United States is not surrounded, as is each of the countries of Europe, with nations with which it may at any time be plunged into war.

So, the mere fact that many other countries have adopted public ownership cannot validly be advanced as an argument for that policy in the United States, because other countries have been influenced by conditions which do not exist here, and by reasoning which is not applicable here. The case for government ownership in this country, unlike the case for it anywhere else that it has been adopted, must be based entirely on (1) economic and (2) political grounds — the political grounds that may be assigned here being widely different from those that have been assigned elsewhere. Would the railways probably be more economically operated if acquired by the government? Would they probably give better service? Would their financial results probably be better for the taxpayers under public ownership than they are or can be made under private ownership? Under which policy would their rates probably be the lower, the more equitable and the better adjusted to industrial and commercial needs? Under which policy would the condition of labor be better? Under which would politics be cleaner and government more wise and efficient? These are the questions that are really pertinent to the general subject in this country.

CHAPTER V

COST OF CAPITAL

WE have seen in the preceding chapter that one of the main arguments for government ownership is that the public could and probably would furnish the service of transportation more cheaply than private companies do or probably can furnish it. The defenders of private ownership controvert this. These opposing contentions raise one of the most important issues in the case of public versus private ownership.

The total cost of transportation is roughly divisible into two parts, (1) cost of capital, and (2) expenses of operation. If the government should acquire the railways it would have to raise a large amount of capital and pay interest on it, as railway corporations must pay interest and dividends. To get the necessary funds for paying the interest it would have to make the railways earn them, or raise them by taxation. The advocates of public ownership say, however, that governments can get capital at a lower rate of interest than private corporations; and that the difference between what must be earned to pay a return on the investment under private ownership, and what would have to be earned to pay a return on it under public ownership, could be saved.

If public ownership should be adopted in the United States the roads doubtless would be acquired by the federal government. The federal government can borrow more cheaply than any corporation, and probably more cheaply than any other government. A small amount of its bonds,

issued when its credit was low, bear interest at 5 per cent., others at $4\frac{1}{2}$ per cent., a large amount at 4, a smaller amount at 3, and the largest part at 2. The average interest on all its bonds is $2\frac{1}{2}$ per cent. But the 2's may be used by the National banks as security for issues of bank notes, which gives them a fictitious value — in other words, enables them to be floated at a rate of interest abnormally low; and the 3's may be used by the banks as collateral to secure the deposit of government funds. It is uncertain how they would stand in the market if their value depended solely on the credit of the government, the length of time to their maturity and their rate of interest. The debts of other leading countries — especially those owning large railway mileages, the facts about which are the most pertinent here — bear interest nominally at 3 to 5, and even 6, per cent.¹ But in many cases the interest rates quoted do not accurately represent the conditions. The bonds of governments often have been issued at a discount, which makes the real rate of interest paid on them higher than the nominal rate; and in numerous cases they are now quoted at less than par, which shows that other securities of the same government could not be issued at par unless they bore a higher rate of interest. For example, in the spring of 1913 Japanese government bonds bearing interest at $4\frac{1}{2}$ per cent. were quoted at \$86 $\frac{1}{4}$. On that basis, the Japanese government, to sell similar bonds at par, would have to offer over 5 per cent. British consols,

¹ Australia,	3 to 4 per cent.	Japan,	4 to 5 per cent.
Austria,	3 to 5 per cent.	Russia,	3 to 6 per cent.
Canada,	$2\frac{1}{2}$ to 4 per cent.	Italy,	3 to 5 per cent.
Hungary,	3 to 5 per cent.	Switzerland,	3 to 4 per cent.
France,	$2\frac{1}{2}$ to 3 per cent.	United Kingdom,	$2\frac{1}{2}$ to $2\frac{3}{4}$ per cent.
German Empire and States,	3 to 4 per cent.		

"Statistical Abstract of the United States," 1912, p. 804.

bearing interest at $2\frac{1}{2}$ per cent., were quoted at \$75. On that basis to issue similar securities at par, the British government would have to offer $3\frac{1}{2}$ per cent. French rentes, bearing interest at 3 per cent., were quoted at \$84. On that basis the French government, to issue similar securities at par, would have to offer 3.6 per cent. United States government 4 per cent. bonds coming due in 1925 were quoted in July, 1913, at \$110. At that price they yield an annual return of only 3.63 per cent. It is very questionable if any government in the world having already a large indebtedness could now float a substantial issue of securities at less than $3\frac{3}{4}$ per cent., or a very large one at less than 4 per cent.

If the federal government should acquire the railways it would have to make an issue of bonds much larger than the existing debt of any nation. Only a small part of them could be given an artificial value by accepting them as security for National bank notes or government deposits of currency. Practically all would have to be sold on their merits as an ordinary investment. In spite of the fact that the government would stand back of them, it can safely be assumed that they would not sell for par if they bore interest at less than $3\frac{1}{2}$ per cent.² But $3\frac{1}{2}$ per cent. would be considerably less than the rates of interest and dividends that even the strongest of American railways usually must pay to market their securities at par. There is a substantial amount of railway bonds on which interest is but 3 to 4 per cent.; but on the greater part it is 4 to

² See an interesting discussion regarding a proposed government holding company for taking over all the railways by W. W. Cook and W. M. Acworth in the *Railway Age Gazette*, June 21, 1912, p. 1534. Mr. Cook thought the guarantee of the government would enable 3 per cent. bonds of the holding company to be sold at par. Mr. Acworth evidently thought a guarantee of 4 per cent. would be required.

5 per cent.; on a large portion, 5 to 6 per cent.; and on a considerable amount, 7 to 8 per cent.³ The rates on most of the stock paying dividends range from as low as 2 to as high as 10 per cent. The prevailing rates are from 5 to 8 per cent. Only seven per cent. of the stock pays 10 per cent. or more.⁴ The average dividend on *dividend-paying* stock in 1910 was 7.5 per cent.; the average dividend on all stock, 5 per cent.

While railway corporations, when they do pay interest and dividends, usually pay a higher, and often a much higher, rate than governments would have to, in many cases they do not pay any dividends at all, or in some cases interest, either. There has never been a year when the railways of the United States have not failed to pay dividends on a large amount of their stock. The part receiving no dividends has varied during the last quarter-century from as much as 70 per cent. of the total, in 1896, to as little as 33 per cent., in 1907. In 1910 the amount of stock receiving no dividends was 33.29 per cent. Nor have the railways ever in any year paid interest on all their debt. There are wide differences in the foresight with which investments are made in privately-owned enterprises and in the skill with which such enterprises are managed. Unless the normal course of things be interfered with in some way, the result always is that some

³ Interstate Commerce Commission, "Statistics of Railways in United States, 1910," p. 56. Out of a total of \$7,408,183,482 of mortgage bonds, no interest was paid on \$599,206,936; 3 to 4 per cent. was paid on \$718,268,923; 4 to 5 per cent. on \$3,860,241,066; 5 to 6 per cent. on \$1,496,166,718; 6 to 7 per cent. on \$589,974,163; 7 to 8 per cent. on \$144,052,800; and 8 to 9 per cent. on \$272,871.

⁴ Interstate Commerce Commission, "Statistics of Railways in the United States, 1910," p. 56. Out of \$8,113,657,380 stock, no dividends were paid on \$2,701,078,923, or 33.29 per cent. of the total; 5 to 6 per cent. was paid on \$762,257,698; 6 to 7 per cent. on \$1,464,223,723; and 7 to 8 per cent. on \$1,150,692,548.

earn large returns, some only moderate, and some none. This has been the case with the railways of the United States.

On the other hand, if the government should buy the railways it would doubtless obligate itself to pay annually, or at shorter intervals, the interest on all of the capital that it invested in them. Whether there would then be a reduction in the amount that would have to be earned to pay a return on the investment would depend not only on the rate of return that the government would have to pay, but also on the amount of its investment.

There is no way in which we can determine how much the railways would cost the government. But there are some data which, combined, enable us to make an approximate estimate. The roads would, no doubt, be transferred at an appraised valuation arrived at either by agreement or by condemnation proceedings under the power of eminent domain. The courts of this country have outlined somewhat more fully how valuations of public utilities must be made for determining the reasonableness of rates than how they must be made for taking properties under the power of eminent domain. But the principles involved are similar.⁵ It is held that legislatures or commissions may not fix rates so low that they will not yield a fair return on the fair value of a public utility, for this would be, indirectly, to confiscate the property. To take the property of a public utility under the power of eminent domain at less than a fair valuation would be to do directly what the law will not permit in rate cases to be done indirectly. The courts would not allow this. On the contrary, a valuation in a condemnation proceeding probably would include some factors that ordinarily would

⁵ Whitten: "Valuation of Public Service Corporations," p. 14, and cases cited.

not be included in a valuation in a rate case. An appraisal under the power of eminent domain would be based on some, and probably all, of the following factors: cost of original construction and permanent improvements; cost of reproduction, amount and market value of stocks and bonds; past, present and prospective net earnings, going value, and franchise value.⁶

It has often been charged that the railways of the United States are greatly over-capitalized. Therefore, it is sometimes assumed that they could be acquired by the government at a cost much below their capitalization. Their gross capitalization on June 30, 1910, was \$18,417,132,238. But this figure contains a large duplication. It includes⁷ securities of some railways owned by other railways, securities issued to cover investments in outside properties, etc. The *net* capitalization, on June 30, 1910, of 228,841 miles — in other words, the capitalization representing railway properties only, and actually outstanding in the hands of the public — was \$14,338,575,940, or \$62,657 a mile. These statistics do not embrace all of either the mileage or the capitalization. For example, the figures for switching and terminal companies are excluded. Of course, in case of the adoption of government ownership they would be included in the purchase. The total mileage operated in 1910, exclusive of switching and terminal companies, was 240,831 miles. This is almost 12,000 miles more than the mileage covered by the above figure for net capitalization. The net capitalization of all the railways, exclusive of switching and terminal companies probably was about \$14,700,000,000. While the

⁶ Whitten: "Valuation of Public Service Corporations," and especially the chapters on "Going Concern in Purchase Cases," "Franchise Value in Purchase Cases," etc.

⁷ Interstate Commerce Commission, "Statistics of Railways in the United States, 1910," p. 52.

switching and terminal companies would have to be included in a public purchase, they must be excluded from consideration here, because, for some reason, no figures for their mileage, capitalization or operations are given by the Interstate Commerce Commission. The foregoing relates only to the par value of railway securities. Their market value could only be determined by averaging their quotations for a considerable period.

There are not available for the railways as a whole any satisfactory figures regarding the cost of original construction and permanent improvements. The aggregate "net investment in road and equipment," as reported by the railways to the Interstate Commerce Commission,⁸ amounted in 1910, for 226,115 miles, to \$14,387,816,000, or \$63,631 a mile. At this rate the total for the entire operated mileage — 240,831 miles, excluding switching and terminal companies — would be \$15,324,300,000. No great weight could be accorded to this figure standing alone. The Commission expressly gives warning that its own figure for investment in road and equipment is not to be taken too seriously. But in the court of reason as well as in a court of law we are justified in allowing some consideration to even a poorly substantiated piece of evidence when it is corroborated by other and well substantiated evidence.

The valuations that have been made in several states doubtless are indicative of what a valuation of all the railways would amount to. In the five states of Washington, South Dakota, Michigan, Minnesota and Wisconsin, the net capitalization of the railways amounted to \$1,210,999,023; the estimates of the cost of reproduction, new, of the physical properties to \$1,211,806,522; and the estimates of present value — arrived at by making

⁸ "Statistics of Railways in the United States, 1910," p. 78.

deductions for depreciation from the cost of reproduction, new — to \$1,035,089,184. In these five states the aggregate estimated cost of reproduction, new, of the physical properties was slightly larger, and the estimated cost of reproduction, less depreciation, about 15 per cent. smaller, than the net capitalization. In New Jersey, where a valuation recently was made for purposes of taxation, the aggregate gross capitalization of the seven principal lines was placed at \$357,346,186, and their valuation at \$361,157,229.⁹ In Michigan, Washington and Wisconsin the public authorities have taken the view that in railway valuation — in Michigan for taxation, in Washington and Wisconsin for rate regulation — some addition for “non-physical” properties, “going value,” and “market value” should be made to the estimated cost of physical reproduction, less depreciation; and in these states the valuations arrived at after making these additions approximated the estimated cost of reproduction, new.

The New York, New Haven & Hartford is one of the most heavily capitalized railways in the country, but the Massachusetts Joint Commission — composed of the Railroad Commission, the Tax Commission and the Bank Commission — which investigated the relation between its assets and liabilities in 1911 reported that “the corporate assets of said corporation were sufficient as of June 15, 1910, to secure its said outstanding capital stock and indebtedness.”¹⁰ As a matter of fact, the valuation made for the commission by Professor George F. Swain showed that the value of the physical property of the New Haven substantially exceeded the capitalization properly assignable to it.

⁹ Report on Revaluation of Railroads and Canals in New Jersey, Trenton, 1911.

¹⁰ Report of the Joint Commission on the New York, New Haven & Hartford R. R. Co., 1911.

A very great proportion of the physical value of railways is concentrated in their terminals in large cities. No valuations have been made in most of the states where the largest terminals are situated. Past appraisals indicate that the cost of reproduction, new, of the physical properties of all the railways of the United States will be found, when the valuation now being made by the Interstate Commerce Commission is finished, to exceed their net capitalization, amounting in 1910, as we have seen, to about \$14,700,000,000; that after allowing for depreciation the “present value” of the physical properties will be found to equal the net capitalization; and that if anything be allowed for “intangible values” the total valuation will exceed the total net capitalization.

It has often been contended that in making a valuation for regulation of rates, no account should be taken of the current earnings, because the earnings result from the application of the existing rates to the existing traffic, and to determine the reasonableness of these rates is the very purpose of the valuation. This reasoning would be inapplicable to a valuation for purchase. “If the company is operating under a perpetual franchise, but subject to regulation as to service and rates of charge, the value of the property and rights transferred should be based on the estimated present and future net income under reasonable rates of charge.”¹¹ The rates of the railways of the United States having been regulated by public authorities, state and national, for over a quarter of a century, the courts doubtless would hold that, on the whole, their rates, and the net earnings realized by charging them, must be presumed to be reasonable. Excluding switching and terminal railways, for reasons already stated, the operating income in 1911 of all the railways — that is, the earnings

¹¹ Whitten: “Valuation of Public Service Corporations,” pp. 567-568.

they had left after the deduction of operating expenses and taxes — was \$773,865,700. The average annual operating income during the four fiscal years since the adoption of the Interstate Commerce Commission's present system of accounting for which we have statistics — 1908-1911, inclusive — has been \$748,921,673. The operating income of the railways, capitalized at a proper rate, would give their value as going concerns.¹²

An English law, passed in 1844, and still in effect, provides that in case of the adoption of government ownership in the United Kingdom, the state shall take railways which have earned over 10 per cent. at twenty-five years' purchase of their average net earnings for the preceding five years — in other words, at twenty-five times their net earnings. This is capitalizing the net earnings at 4 per cent. The Prussian state purchase law of 1838 also provided that the State should pay to the companies at least twenty-five times their average net earnings for five years. The Prussian railways when subsequently bought were purchased at prices agreed on after negotiations between the government and the companies; but the amounts paid usually were determined chiefly by the net earnings. The government of Switzerland in most cases paid twenty-five times the average net earnings per year for the ten years preceding the purchase. Average net earnings for a substantial period capitalized at 4 per cent. seem to have been generally accepted as a fair basis of valuation of railways for public purchase. In Japan the cost of construction of the private lines was first ascertained. Then the average rate of profit during the six semi-annual periods beginning with the last half of 1902 and ending with the last half of 1905 was calculated. The rate of profit found to have

¹² "Commercial Valuation of Railway Operating Property in the United States, 1904." *Bulletin 21*, Bureau of the Census, p. 9.

been earned was multiplied by 20, and the product constituted the percentage of the construction cost which the government paid. For example, if the rate of profit had been 6 per cent. the government paid 120 per cent. of the construction cost. The amounts paid were in several cases twice the capitalizations of the railroads.¹³

Professor Henry C. Adams, then Statistician of the Interstate Commerce Commission, and his assistants, in making the commercial valuation of the railways of the United States as of June 30, 1904, based their appraisal chiefly on a capitalization of the operating income. Their plan worked out as, in substance, a capitalization of the average operating income during the preceding five years at $4\frac{1}{4}$ per cent. In other words, the commercial valuation amounted to about twenty-one times the average operating income during the period mentioned.

A valuation based on the capitalization of the average operating income of the railways of the United States during the four-year period ending with June 30, 1911, at 4 per cent. would amount to \$18,723,041,825; and a valuation based on the capitalization of it at $4\frac{1}{4}$ per cent. would amount to \$15,767,000,000. The former figure exceeds the *gross*, and the latter the *net*, capitalization as of June 30, 1910. This is not an unexpected result, as the commercial valuation as of June 30, 1904, came to \$11,244,852,000, while the stocks and bonds outstanding in the hands of the public at that time amounted to only \$9,586,000,000.¹⁴

The foregoing seems to indicate that on any probable basis or bases of valuation the government, if it had acquired the railways as they stood on June 30, 1910, would

¹³ "The Railways of Japan," by J. E. Slater, in *Railroad Men*, May, 1913.

¹⁴ Interstate Commerce Commission, "Statistics of Railways in the United States, 1904," p. 58.

have paid for them an amount somewhere between \$14,500,000,000 and \$19,000,000,000. The figures as a whole suggest that an estimate of \$16,000,000,000 would not be very wide of the mark. Interest on this at $3\frac{1}{2}$ per cent.—the rate it would seem the government would have to pay on the bonds issued to buy the roads—would be \$560,000,000 a year. The net interest and dividends paid by the railway companies in 1910 amounted to \$680,449,427. This indicates the possibility of a saving in the total return paid on the investment in railways under government ownership of about \$120,000,000 a year, or $17\frac{1}{2}$ per cent. of the return now paid under private ownership. In proportion as the amount the railways cost the government, or the interest rate that it had to pay, varied from the estimates made, the actual saving made would vary from the estimated saving. If the interest rate it had to pay were as much as $3\frac{3}{4}$ per cent. its total annual interest would be \$660,000,000, or only \$20,000,000 less than the net interest and dividends of the railways in 1910.

Nationalization of railways is becoming a very live issue in Great Britain. Four of the seven members of the "Vice-Regal Commission on Irish Railways" reported in 1910 in favor of government acquisition of the railways of Ireland, while three members opposed it. The total capitalization of the railways of the United Kingdom in 1910 was \$6,421,000,000. Various estimates have been made of the cost of nationalizing them. An estimate presented to the Prime Minister this year at a hearing of representatives of railway employes who advocated nationalization was that the railways could be acquired for \$5,689,986,280¹⁵ in securities bearing interest at $3\frac{1}{2}$ per cent.

¹⁵ Estimate of A. G. Walkden, representing Railway Clerks' Association, in presenting argument for nationalization to Premier Asquith on March 17, 1913.

This was based on the average net earnings in 1909-10-11. The annual interest on the government's railway debt would then be \$199,149,000, or \$28,450,000 less than the average annual profit of the railway companies during the three years mentioned. It was argued that this saving could be used to benefit traders by reductions in rates and employes by advances in wages. On the basis of the net earnings in 1910, the *Railway News*¹⁶ calculated that the government, to acquire the railways, would have to issue \$8,417,181,000 in $2\frac{1}{2}$ per cent. consols on which the annual interest would be \$210,427,460. On the basis of the earnings of 1910 the *Railway News* estimated that the saving in the return on capital effected by nationalization would be \$20,031,000 a year.

It is desirable to consider in this connection the reason why governments do not have to offer as large a rate of return to obtain capital as railway corporations do. The rate of return that must be paid for the use of capital depends chiefly on the risk of loss the owner of it takes, or believes he takes. When he buys the bonds or stock of a railway company he has to rely entirely for protection against the loss of his principal, and for interest or dividends, on the earnings of the railway. He incurs the risk that, from bad management or other causes, the road's ability to realize adequate net earnings may be limited, reduced or destroyed and that he may lose part, or all, of his investment; and he demands and must be paid a return commensurate with his risk. Under public ownership it is the universal custom, which doubtless would be followed here, for the government, clothed with the taxing power, to stand back of the securities issued to acquire the railways, and to pay the interest on them from railway earnings if the earnings are adequate, and if not to make good

¹⁶ Nov., 1911.

the deficit by taxation. The buyer of the bonds, therefore, takes very little risk of losing either his principal or his interest. Under government ownership the risk involved in the possibility that the net earnings of the railways will be insufficient to pay a return on the entire investment in them is transferred from the holders of the securities to the taxpaying public, which, through its government, guarantees them. And on the adoption of public ownership in this country, it would be this transfer of risk from the investors to the taxpayers that would make it possible for the government to float bonds at a lower rate of interest than railway corporations can. The reduction in the cost of capital would be due, not to a reduction in the risk of the enterprise, but to a shifting of it. While, under private ownership, if from bad management or any other cause net earnings are unduly limited or reduced, or are actually destroyed, the investor must suffer, under government ownership it is the taxpaying public which must suffer. Of course, the burden of bad management would in either case fall directly, at least, on travelers or shippers if it resulted in the charging of higher rates instead of in impaired net earnings. But ultimately the shippers would transfer most of their part of the burden to the consuming public.

The point that the risk of loss is not reduced by a change from private to public ownership, but only transferred, will be made clearer if it be supposed that the government, instead of absolutely guaranteeing the interest on the railway bonds issued by it, should merely make the interest a charge against net earnings, to be paid only if the net earnings were sufficient to pay it. Then, whether the buyer of the securities would get a return would, as under private ownership, depend wholly on how the roads were managed; and whether the total interest that would have to be paid would be more or less than the interest

and dividends railway corporations must pay would be determined by whether the investors thought public management would be more or less efficient than private management. They would certainly deem their chances of loss greater than if the government guaranteed the securities and the tax-paying public took all the risk; and would demand and have to be paid a higher rate of return. This rate would be enough higher, perhaps, to make the total interest the government would have to pay on its railway bonds as high as, or higher than, the total return railway corporations have to pay on their stocks and bonds. There would then be no saving by the use of the credit of the government, simply because its credit as a government would not be used, but merely its credit as a railway owner and manager.¹⁷

We must consider the indirect, as well as the direct, effects that nationalization of the railways would have. The government always would have debts besides that incurred to acquire the railways. Now, governments are not exempt from the operation of the same economic laws that affect individuals. Neither can engage in business enterprises involving risks without increasing the rate of interest against themselves, and the more they increase their debts and risks the higher the rates they must pay. That governments are not immune from the same influences that raise the rate of interest or reduce the value of the securities of private concerns is rather strikingly illustrated by the

¹⁷ See a similar discussion of the risks and gains of municipal ownership in Major Leonard Darwin's *Municipal Trade*, pp. 183-188. "If a town council were to borrow money, and if it were to make the interest solely payable out of the profits made by the gas-works bought with the sum thus raised, then few will doubt that a higher rate of interest would have to be paid than would be necessary in the case of the ordinary municipal debts, the security for which is limited in no such way." Darwin, p. 187.

fact that on May 7, 1913, $4\frac{1}{2}$ per cent. bonds of the Japanese government were worth only \$87.78, while $4\frac{1}{2}$ per cent. bonds of the Pennsylvania Railroad were worth \$101.50. The credit of a strong, privately-owned railway is better than that of a government which is overloaded with debt, as the Japanese government is, as these figures strikingly illustrate.

We have estimated that the government would have to pay $3\frac{1}{2}$ per cent. on the bonds issued to buy the railways. If it had to pay that much on them it would have to pay a similar rate on all the other bonds issued by it contemporaneously or subsequently on similar terms, whether in refunding old debts or creating new. The total interest-bearing debt of the federal government on June 30, 1911, was \$915,353,190. The total interest on it was \$21,336,673, or an average of 2.33 per cent. All this debt must be paid or refunded in due course. An advance in the average rate of interest on this amount of debt to $3\frac{1}{2}$ per cent. would raise the total interest on it to \$32,037,362, an increase of \$10,700,689 annually. This would be a loss to the public caused by the adoption of government ownership that would offset part of the saving that would be made in the return that would have to be paid on the capital invested in railways.

The national debt might be largely increased by causes other than the acquisition of railways. For example, a great war might make a heavy addition to it. The Civil War increased the interest-bearing debt of the United States from \$90,000,000 in 1861 to \$2,332,000,000 in 1866. If a proportionate increase in the national debt should occur again, and the circumstance that the government owned the railways should make it necessary to pay even one-half of one per cent. more on the new debt than would otherwise be requisite, the additional interest that would have to be paid on this new debt on account of gov-

ernment ownership of railways would wipe out the total saving made in the cost of railway capital.

If the government should acquire the railways, it would in future make railway extensions and improvements. These things would involve the investment of additional capital. The total return that would have to be paid on this added capital would, of course, depend both on the rate of interest the government would have to pay, and on the skill and economy with which the capital was laid out; and these, in turn, would depend on the character of the management. If public management should be as skillful and economical as private management, the absolute return that would have to be paid on the new capital invested would be less than it would be under private ownership, because the rate of return that would have to be paid would be less. In making extensions and permanent improvements, as in making the original purchase, however, the taxpayers would assume all the risks which under private ownership are taken by investors in railway securities.

It is clear, then, that under government ownership the rate of return on the investment in railways that the government would have to pay would be less than the rates of interest and dividends that the railway corporations as a whole have to pay. It is probable that the total interest that the government would have to pay would, for some years to come, at least, be less than the interest and dividends that railway corporations would have to pay. But to secure this reduction in the part of the cost of railway transportation represented by return on investment, it would be necessary for the taxpaying public to assume in the place of investors the risk of inefficient management, and of consequent inadequate net earnings. Therefore, the next question to be considered is whether public management probably would be more or less economical than private management.

CHAPTER VI

ORGANIZATION AND OFFICIAL PERSONNEL

THE total income of the railways of the United States in the year ending June 30, 1910, the last year for which we have complete statistics of the Interstate Commerce Commission, was \$2,829,109,462. This includes earnings from operation and net return from outside investments. Almost 4 per cent. of this was paid out in taxes, almost 10.4 per cent. in dividends, and 13.6 per cent. in interest; and 7.84 per cent. was held for adjustments and improvements. Sixty-four and one-half per cent. was consumed by operating expenses. Operating expenses so much exceed all other forms of outgo that the effect which a change from private to public ownership would have on them is a point of the greatest moment. An increase of but 7 per cent. in operating expenses would wipe out the saving of about 17½ per cent. in the cost of capital which we concluded in the last chapter could be made under government ownership. If operating expenses were substantially increased, rates would have to be raised, or there would be a deficit to be made good by public taxation. If operating expenses were substantially reduced, the added net earnings could be used for public purposes, or rates could be lowered. The opponents of government ownership argue that it would cause a large increase in operating expenses. Its advocates argue that expenses would be much reduced.

Following a change to public ownership expenses would be affected by two new influences, consolidation of the roads into one system, and public management. It is con-

ceivable that consolidation and its results might be secured under private ownership. But, while this is conceivable, it seems improbable that the public would ever consent to the merger of all the railways while their ownership was private. In discussions of government ownership much stress often is laid on the economies which it is said would result from consolidation. But consolidation would not effect economies. It would merely afford opportunity for effecting them. Whether these opportunities would be availed of, as well as whether operation in general would be more or less efficient under government than under private ownership, would depend on the organization, personnel and incentive of the management. Let us, therefore, consider how these factors would be affected by government ownership before we consider the possible and probable results of consolidation.

The foundation of a corporate organization is constituted by the stockholders. They own the property and elect the directors. The directors exercise supervision over the management and choose the executive officers. The executive officers operate the properties and, incidentally to this, select most of their subordinates. Under government ownership in this country the people would be the stockholders. What would be the organization of a government railway system in this country in other respects?

In the United Kingdom the official head of a state railway system doubtless would be a member of the Cabinet responsible to Parliament, and dependent for his tenure of office on his party's continuance in power. Parliament would correspond to the board of directors of a corporation, and the Minister of Railways to a corporation chairman or president. In Belgium, where government ownership does prevail, the Minister of Railways, Posts and Telegraphs is a political official directly responsible to Parliament.

Likewise, in Austria the Minister of Railways, and in France the Minister of Public Works, are members of the Cabinets who are responsible to the Parliaments, and change with each change of government.

In Italy, the Minister of Public Works, a political official, is the titular head of the railway system. But the law seeks to make the railway management autonomous and free from political influence. Therefore, it gives the general manager "the direct management, including finance, of all matters concerning the working of the railways. The Minister of Public Works and the Minister of the Treasury, so far as the latter is concerned, are to satisfy themselves by means of inspections that the administration and working are performed in a satisfactory manner." There is a council of administration having broad powers of supervision. It is composed of the general manager and eight other members — two of them high state railway officials, three high state officials, and three, having special technical and administrative qualifications, representing the general public.¹

In each of the Australasian colonies there is a Minister of Railways whose tenure depends on Parliament. To remove the roads from political influence most of the Australasian governments have in recent years appointed permanent commissioners of railways who have broad authority and legally are largely independent of the minister. In Switzerland the general control is in the Federal Council, corresponding to a cabinet. It prepares all railway business for the Federal Assembly or Parliament; and the Assembly passes on questions pertaining to the development of the railways, their financial affairs, the classification and wages of employés, etc.

¹ There is also a parliamentary supervisory committee of six senators and six deputies which reports to Parliament on the conditions and needs of the railways.

In Germany the Bundesrath, composed of representatives of the various states forming the Empire, and constituting the upper house of the Imperial Parliament, has general supervision of all the railways of the country, and adopts regulations governing their operation. Its executive office is the Reichs-Eisenbahn-Amt. The president and members of this body are appointed by the Emperor; its subordinate officers are appointed by the Imperial Chancellor; and its duty is to see that all imperial laws and regulations regarding railways are obeyed, and to prepare railway measures for the Bundesrath. It conducts its business under instructions from and on the responsibility of the Imperial Chancellor. This outlines the organization of the German Empire for supervising the entire railway system of the Empire. The different railways are, in the main, owned and operated by the various states. The active head of the great Prussian-Hessian State railway administration is the Prussian Minister of Public Works. He is a permanent official appointed by the King, and has large powers of administration and wide authority over expenditures within the limits of the yearly estimates sanctioned by Parliament. The organization of the railways of the smaller German states is similar to that of Prussia-Hesse. The Minister of Railways of Hungary, like that of Prussia, is a permanent official.

It will be seen that there are, roughly, three main types of government railway organization. One has as its active administrative head — as in Belgium, France and Austria — a cabinet member responsible to Parliament. The second, represented in Italy and Australasia, has as its nominal administrative head, at least, a minister responsible to Parliament; but an attempt is made in these countries to protect the railways from political influence by giving the permanent officers independent authority. The organization of the German railways is unique. The

members of the Bundesrath, which acts as a kind of board of directors for all of the state railways, are appointed by the kings of the German states, and constitute rather a council of ambassadors than a legislative body. They and their executive arm, the Reichs-Eisenbahn-Amt, live in no fear of the electorate and are independent of public opinion. The ministers of railways, also, including especially that of the largest system, the Prussian-Hessian, being permanent officers appointed by the kings, are independent of the voters and lawmakers.

It would be impossible to have in the United States under our form of government a railway organization like any of these. We could not have, as in Germany, an organization hardly at all responsible to the law-making body or the people, because we have not, as in Germany, a government monarchical in form and almost autocratic in fact. We could not have, as in other countries, a railway organization directly answerable through a responsible minister to the law-making power and through it to the people; for our cabinet ministers and their subordinates are appointed by and responsible to the President, who is elected by, receives an independent mandate from, and has an independent responsibility to the people. The administrative head of our state railway system doubtless would be a cabinet officer appointed by the president, and responsible to him and through him to the people. The organization probably would be similar to the present organization of our Post Office department. Congress might create a board to enforce the laws passed by it, as, under private ownership, it has created the Interstate Commerce Commission as a regulating body. But this board, like the minister of railways, would have to be appointed by the President; and the President is not responsible to Congress.

Keeping in mind the foregoing regarding what the

general organization of a state railway system in this country would have to be, unless our form of government were remodeled, let us see what the personnel of such an organization probably would be and how it would probably work.

The substitution of the public for the stockholders of the railways would be the substitution of one enormous body for many small ones. The Pennsylvania Railroad has the largest number of stockholders of any American railway—about 70,000. Our government railway system would have over 90,000,000 shareholders. The relations between most of the railway corporations of the United States and their stockholders are far from ideal. The stockholders are usually divided into two classes. The first commonly owns a minority of the stock, but acts as a unit, secures the support and proxies of other stockholders, elects the directors and controls the management. The second class, ordinarily more numerous both in individuals and in shares owned, is composed of persons who have bought their stock with no thought of exercising any direct influence on the management, but merely to get dividends. They are widely scattered. They seldom or never attend stockholders' meetings. They give proxies year after year to the controlling shareholders, and usually exercise no influence on the election of directors or the operation of the properties. Often a group of stockholders that does not own an actual majority of the stock of any one of several lines forming a large system controls the election of the directors and the management of the whole system by means of holding companies and other similar devices.

Nevertheless, when a very important corporate question arises it often is possible to get an expression from a majority of the stockholders as to what policies, directors or managers they prefer. And when the stockholders of

a railway get discontented they can always sell their stock. This frees them from an unsatisfactory business connection and commands instant attention from the most calloused directors and officers. For a selling movement immediately affects a railway's credit, depreciates the prices of all its securities, and may change its control. There have been some cases where the "inside" or controlling stockholders, whether belonging to or being merely represented on the board, have used information obtained in a fiduciary capacity to defraud the rest of the stockholders. The situation might be better if the shares of our railways were more widely diffused among their employés and the people living along their lines, and if more of their stockholders informed themselves as to their affairs, attended their annual meetings, and quizzed and criticised the directors, as is done in England. But the concentration of control in the hands of a few stockholders is not an unmixed evil. In most cases they use their control honestly and in a businesslike way, and the fact that the control is in a few hands often promotes efficiency in management. A few men, thoroughly familiar with the affairs of a concern and acting together, are more likely to choose good directors and hold them, and through them the management, to high standards of probity and efficiency, than a large body of persons who cannot act in concert and who have little information and only hazy ideas about the company's business.

Whatever the defects of the present bodies of stockholders, it seems clear that they have a better chance to act intelligently regarding the affairs of their corporations than the entire people of the United States could have to so act regarding the affairs of a railway system covering the whole land. Very few of the people could get the information regarding a railway system of such magnitude necessary to enable them to vote wisely on the poli-

cies to be followed in its development and management. Nor could the stockholders of a government system, like those of a railway corporation, sell their interest if the management did not suit them.

It will be said that the people would at least vote to secure management that would be of public benefit, while stockholders aim only to get for themselves as large returns as possible. It is to be feared, however, in view of the way many persons vote now on such questions as the tariff, river and harbor improvements, and measures affecting labor, that the voters would often be influenced more by sectional or class, than by national, considerations. Besides, when the owners of private railway systems now try to operate them solely for their own interest, and without any regard for the rights or welfare of the public, they are restrained by legislatures, Congress and railway commissions. No such restraint could be exercised over those who, after the adoption of public ownership, should use their votes to promote sectional or class interests. Finally, while the stockholders of railways commonly choose directors for their supposed fitness as such, the fitness of candidates for Congress for dealing with railway problems could seldom count heavily in their election or defeat.

The people, then, under government ownership would not be as well situated to act wisely and effectively in regard to the management of the railways as are the stockholders. How would the wisdom and effectiveness of those who directed the management probably compare with the wisdom and effectiveness of those who direct the management under private ownership?

The shortcomings of the present railway stockholding bodies are reflected in the directorates. Some of the directors are dummies. Some are the incapable representatives of inherited wealth. Many are business men of

ability and large affairs, but who have so many interests that they are unable to give much time or attention to the affairs of any one railway. Most of them live in the East, seldom travel over their lines, and know little of their physical conditions and needs, or of the social and industrial conditions and needs, and the state of public sentiment, in the communities which the lines serve. But, while the personnel of most of our railway directorates has serious defects, it also has marked merits. While most of the directors are men of large affairs who cannot give much time to any particular road, a little of the time of business men of ability and experience is worth more than much of the time of men of limited ability and experience. Furthermore, the characteristics of our railway boards often cause them to give large authority to the executive committee, the chairman of the board, or the president, according to where the real seat of power and responsibility happens to be located. It is because of this, rather than because they own large amounts of stock, that some one man, or small group, dominates almost every one of our large systems. It is chiefly this that has given men such as E. H. Harriman, James J. Hill and others almost autocratic power. And it is largely owing to the giving of this autocratic authority that many of our railway systems have been developed and operated with the efficiency that they have been. Autocracy, whether tempered, as in Russia, by assassination, or, as in Germany, by the benevolence of the autocrat, is not the best government for a nation; but autocracy, tempered by a good board of directors, is the best government for a large business concern. In England railway directors are paid salaries — on the large roads usually about \$5,000 a year — and participate more actively in the management than they do in the United States, where they are usually paid only a fixed sum — \$25 to \$50 — for each board meeting they

attend. The English directors do most of their work in committees, and the English system has some advantages. But in point of economy the English roads are less efficiently managed than those of some other countries. Probably the all-around efficiency of their managements would be greater if their active heads were fewer.

With the adoption of public ownership the lawmakers, under any form of government, succeed to some of the functions of the directors. In Germany they perform few of them. Under the Belgian, French and Austrian system they perform many of them. Doubtless they would perform many of them under government ownership in the United Kingdom. Under government ownership in the United States, Congress, as we have seen, could not succeed, directly, at least, to one of the most important functions of a directorate — that of choosing, promoting and retiring the executive officers. But it could control administration and operation in all their phases. It might deal directly with them, or it might pass general laws governing them, and create a board or commission to handle details and to make reports and recommendations to it.

If Congress itself tried to perform all of the duties it would inherit from the boards it would perform them very unsatisfactorily. Its members must be chosen to deal with numerous and varied subjects of great importance. They could not give much time and attention to railway affairs without neglecting many other matters of moment. The problems of railway management are intricate and difficult business problems; and most senators and representatives are inexperienced in such matters. A national railway system should be managed from a national standpoint; and many members of Congress regard themselves and are regarded by their constituents rather as representatives of their states and districts than of the

nation. Consequently, they devote much of their time and energy to getting pensions, appointments, public buildings, waterway improvements, rural free delivery, and so on, for their states and districts, or to promoting legislation that will especially benefit classes of persons largely represented in their constituencies. Doubtless most railway employes would be put under civil service rules. But there might be on the railways, as there are now in the Post Office and all other government departments, numerous places not under such rules. Members of Congress, without constitutional right, dictate many appointments to Postal department and other government offices. These appointments are usually made without sole regard to the fitness of the appointees. In some cases the votes of members of Congress on postal matters have been determined by the wishes of postal employes. In some cases legislation affecting railways has, even under private ownership, been controlled by the opinion of members of Congress as to the probable effect on their particular states or sections. There is no good reason for believing that Congress, under government ownership, would not deal with railway matters as it does with the other matters mentioned. If it did the railways could not be efficiently operated.

Perhaps Congress would recognize its limitations and delegate many of its functions to some commission or board. It has shown great reluctance to parting with the exercise of any of its powers. But in some instances it has done so. The argument for the creation of a permanent expert commission to make investigations and recommendations regarding tariff schedules, and for action by Congress in accordance with its recommendations, is persuasive. But Congress has not been prevailed on to adopt this policy. But it has recognized its own unfitness to deal in detail with regulation of railways. It has passed legislation laying down general rules governing regulation, and

has created the Interstate Commerce Commission with broad powers to administer the regulating statutes.

In any event, Congress would have to legislate prescribing the organization and methods of administration of the state system; and it would have to deal subsequently in more or less detail with these matters. Doubtless it would feel called on to regulate from time to time the classification and compensation of employes. It probably would legislate more or less regarding rate-making. It would pass on the railway budget, determining what improvements should be made, what extensions should be built, what should be done with profits if they were earned or to make good losses if they were suffered. What has been said about its qualifications for dealing with the problems of railway administration and operation in detail apply with less force, but with much force, to its qualifications for dealing with them in outline.

If the railways were to be efficiently managed it would be necessary to have very little legislative interference with their management. Legislatures are unfit to control and direct in any detail the management of industrial concerns. They are wanting in the necessary detailed knowledge, singleness of purpose, continuity of policy and facility of action. *A priori* reasoning would lead to this conclusion; and it is confirmed by experience. "I am inclined to think," says W. M. Acworth, "that the effect of the evidence is that the further a government departs from autocracy and develops in the direction of democracy, the less successful it is likely to be in the direct management of railroads."² The reasons for this were discerned and stated over thirty years ago with characteristic clearness and en-

² "The Relation of Railroads to the State," a paper read before the British Association for the Advancement of Science at Dublin, Ireland, Sept. 2, 1908. Published in the *Railroad Age Gazette*, Sept. 18, 1908, p. 955.

ergy by Charles Francis Adams, one of the earliest, clear-headed and most profound students of transportation problems in this country. "Now, the executive may design, construct or operate a railroad. The legislative never can. A country, therefore, with a weak or unstable executive, or crude or imperfect civil service, should accept with caution results achieved under a government of bureaus."

In view of experience in this and other countries, it is very doubtful whether Congress would delegate great authority over a state railway system to a board or commission, or to the executive officers, and then step aside and let them run it. It took years of struggle to get the Australasian parliaments to do approximately this; and they have done it but approximately, and only after the railways had suffered greatly for many years from political interference. This interference often led to the construction of unprofitable lines, to unfit official appointments, to unwise changes in wages and rates, etc.

In the early history of the railways of New Zealand (in the '70's) "the government had a comprehensive plan of railway construction involving the completion and extension of lines already begun, so as to make ultimately two main trunk lines running the length of both islands, with feeders into the interior wherever a profitable traffic could be developed. But the pressure of local influence was so great as to compel deviations from the original plan. In some districts railways were built far in advance of requirements, while in others people waited long for lines that might have been made to pay. Sir Julius Vogel desired and expected the railways to pay at least the cost of maintenance and interest on the borrowed capital (about 5½ per cent.), but from every part of the colony arose a clamor for a 'fair share' in the public expenditure, and the appropriations were doled out to more than thirty different districts, with undue regard to political influence.

... To such perversions of the original plan may be traced much of the financial failure in railway administration from the beginning until the present time."³

Political interference has been greatly reduced throughout Australia but there are still complaints of it. Mr. Short, the Commissioner of Railways for Western Australia, in his report for the year ending June 30, 1912, said that the year was one of continual pressure from the staff for increased emoluments and remuneration, and he regretted to refer again, as he did in 1910, to the evil of the exertion of political influence by members of Parliament in support of demands made on the management by employés. Unless the practice is stopped, he said, that part of the law intended to remove the railways from political influence will become a dead letter.⁴

In 1912 the Minister of Works of New South Wales introduced a bill to so amend the railway act as to provide that future "duplications and deviations" of line should be determined by a board composed of the Minister of Railways, the Minister of Works and the Chief Commissioner of Railways, instead of by the Chief Commissioner alone. The Chief Commissioner, Mr. Johnson, issued a statement in which he said that the adoption of this bill would be the beginning of the end of the law passed to reduce political interference. The *Sydney Telegraph* asserted of the measure: "What this means is that the caucus has made its first clutch at the non-political system."⁵ And the *Sydney Herald* observed, "'We want the railways under our thumb,' says the Labor party, 'and we are determined to get behind Mr. Johnson somehow,' de-

³ "Railways in New Zealand," by James Edward LeRossignol and William Downie Stewart. *Quarterly Journal of Economics*, Aug., 1900.

⁴ *Railway Gazette* (London), Nov. 15, 1912, p. 561.

⁵ March 26, 1912.

clares, in effect, the bill now before Parliament."⁶ Throughout Australia "railway matters are still discussed in Parliament, for no line can be constructed without an act authorizing it; money can be voted only by Parliament, and important regulations and alterations of rates have to be laid on the table of the House for a time before they become effective. All this gives members who represent railway districts ample opportunity of mentioning real or supposed grievances and generally talking to their constituents at public expense."⁷

Complaints have also been common regarding political interference with the state railway managements in Canada, Belgium,⁸ France,⁹ Italy, Austria-Hungary,¹⁰ and practically all other democratic or quasi-democratic nations. That political interference with the existing executive departments of our own governments, national, state and municipal, breeds inefficiency and waste is a familiar fact.¹¹ The same causes, if allowed to operate, would

⁶ March 28, 1912.

⁷ "Australian Railways," a paper read before the Royal Society of Arts, London, May 21, 1911, by J. G. Jenkins, former Prime Minister, and also Minister of Works, of South Australia.

⁸ Articles on the "Belgian State Railways," by M. Marcel Peschaud, published in the *Revue Politique et Parlementaire*, for May and June, 1896, and translated in Edwin A. Pratt's book, *State Railways*.

⁹ "Results of Operation of the French State Railways, 1909 to 1911," by C. Colson, *Railway Age Gazette*, May 31, 1912; translated and reprinted from a *Bulletin of the International Railway Congress*. "State Railways in France," by Pierre Leroy-Beaulieu, a paper read before the Congress of the Royal Economic Society, London, Jan. 11, 1912.

¹⁰ "Political influence, which plays a very great part in Austria-Hungary as affecting state railways, from a purely commercial point of view has many obvious disadvantages." Board of Trade Report on Railways in Austria and Hungary, p. 68.

¹¹ See a striking article entitled, "Causes of Waste and Inefficiency

have the same effects on a government-managed railway system.

Suppose, however, that Congress should perform a great act of self-abnegation, and delegate most of its authority to a board or commission. What fitness may we assume such a commission would have for supervising railways? Past experience indicates that the salaries of its members would not attract and hold many men capable of succeeding largely in business. And even if the salaries were attractive it is far from certain that men of the needed business ability and experience would be appointed. The judges of our federal courts are usually appointed because of their special fitness. Our administrative officers seldom have been selected for such reasons. The members of the Interstate Commerce Commission ought to have special qualifications of the highest order; but many of them have not had them when appointed. Most of them have been lawyers with little or no experience in railway affairs. The need for the highest order of business capacity, independence and courage would be far greater on such a government board than on our railway boards of directors. For a government railway system in the United States would be many times larger than any railway system existing in this country or elsewhere. The Prussian-Hessian system is the largest under a single management now; and our state system would have ten times the mileage of the Prussian-Hessian system. And a government railway board in our democratic country would be subjected to and have to resist forms of class and sectional pressure which in number,

in National Government," by Frederick A. Cleveland in the *Review of Reviews* for April, 1912. Mr. Cleveland was chairman of the Commission on Economy and Efficiency appointed by President Taft to "investigate and report what reforms were necessary to reduce waste and increase efficiency in the national government."

variety and strength would many times exceed what would be possible in monarchical Prussia.

The foregoing discussion leads to the conclusion that the people would exert less influence for efficiency on state railways than the stockholders do on private railways. It leads to the conclusion that Congress and any administrative board or commission that it might create would be less fitted to supervise the operation of a government system than the directorates are to supervise the operation of our private railways. But under either private or public ownership the actual managing and operating must be done by the executive officers. How would they, under public ownership, probably compare with the present officers?

The personnel of any salaried class depends on the way its members are chosen, trained and promoted; on their compensation; and on the standing their positions give. The officers of our railways usually are chosen and promoted because of the opinion of the directors or their superior officers as to their fitness. A large majority of the higher officers have risen through the various ranks of employes and officials. Only thus can most men acquire thorough practical knowledge and capacity. There are, to be sure, cases of nepotism and favoritism—some of them gross. But their number is almost negligible.

Railway officers—like government officers, and unlike officers of ordinary commercial concerns—seldom have opportunity to profit largely by investments in their own line of business. The salaries paid to our railway officers are larger than those of government officers. They usually are no more, or less, than the salaries and earnings of men in corresponding positions in other vocations. In the fiscal year ended June 30, 1910,¹² there were 5,476 "general officers," and their aggregate compensation was

¹² Statistics of the Interstate Commerce Commission, 1910.

\$17,949,017, an average of \$3,277 per year. There were 9,392 "other officers," and their aggregate compensation was \$19,499,753, an average of \$2,076 per year.

The standing which a railway official position gives in the United States is rather high. While it may draw criticism, it also confers some distinction. Although the salaries average rather low, those of the higher officers of the principal railways are large. These large salaries, with the prominence and distinction associated with important railway offices, attract and hold able and ambitious men. The foregoing circumstances, together with the fact that ability, energy and knowledge, however gained, are usually controlling in determining promotions, have made the railway officers of this country a class unexcelled for intelligence, industry and efficiency. Would our government, under public ownership, so choose, train and promote the officers of the state railway system as to get and keep as good a class of officers as the private railways now have, and also give the most capable of them an equal opportunity to rise to the positions where their experience and ability would count for most?

As has been shown, the Prussian Minister of Public Works, the administrative head of the Prussian-Hessian system, is a permanent official with large powers who is appointed by the King. So is the Minister of Railways of Hungary. But in no democratic or quasi-democratic country is the minister a permanent expert official. The frequent changes in the cabinets of most countries owning railways gravely interfere with the efficiency of their railways, and doubtless would do so in the United Kingdom and the United States, as they do in the case of the Postal departments of both countries.

The state railway system of Prussia-Hesse, with about 24,000 miles of road, is divided into twenty-one Districts, or "Directions," containing from 600 to 2,500 miles of

line. Each is operated by a president and his staff and has a large measure of autonomy. Likewise, the Italian, the Austrian and the Hungarian lines are divided into districts. The Prussian organization is somewhat like that worked out on the Harriman system in this country, on which, before the system was dismembered under the Sherman Anti-Trust Law, there was a chairman, a director of maintenance and operation and a director of traffic and their staffs in New York, with jurisdiction over the entire system, and five presidents, each in immediate charge of a large mileage. There are now about 245,000 miles of railway in the United States. It would be absolutely necessary under state ownership, if results in the least satisfactory were to be attained, to divide this great mileage into autonomous units, and turn over their operation to officials similar to the presidents and their staffs of the Prussian-Hessian railways and of the Harriman lines. Even then the difficulties in the way of coordinating all the lines so as to operate them successfully would be stupendous; and these difficulties would be increased if the officers were not men of the finest type.

Professor Hermann Schumacher has told how Prussia, when it adopted government ownership, secured capable officers for the state railway system, and how it has kept and developed them. "The whole staff was simply taken over from the private railways by the Prussian State, with the exception of the members of the boards, who were disposed of by compensating them for their loss of position; nevertheless, even in their case facilities were afforded for entering the state service if they seemed suitable. Thus, while eliminating unsuitable elements, the state could organize and work the state railways with the best personnel of the private railways. Together with the experienced staff, it also took over the working traditions under which this staff had been raised. Hence, there was no breaking

with the past. As the efficiency of the staff was not impaired by the fact that the supreme management was altered, so it could not be supposed that the state would have to avail itself of an inferior recruiting material than was at the command of its predecessors, or would less effectually promote the suitable training of recruits. On the contrary, the new state administration, owing to its more extensive field of operation, and its official character, was able to make improvements through which the working capacities of the staff were utilized still more effectually than hitherto. On the broad basis of its extensive working concern it could develop more efficiently the competition among the staff, and thereby provide an ample substitute for the former competition among the different railways, which has proved inadequate in so many respects."¹³

Is it probable that we should follow a similar plan? Most of the officers of lower rank and many of those of higher rank would be retained at first. But there would be serious obstacles to retaining most of the higher officers. Monarchies usually pay their servants better than democracies, but even in Prussia the salaries of State railway officers are low, that of president of a Direction being only \$2,900 and house rent, and those of his assistants being from \$1,000 to \$1,700 and house rent. In Austria and Hungary, officers of the private lines receive much higher salaries than those of the State lines.¹⁴ Undoubtedly, after nationalization in either England or the United States, the salaries of the higher officers would be sharply reduced. It seems most improbable that the United States government would keep the presidents at \$25,000 to \$50,000 a year, the vice-presidents at \$15,000 to \$30,000, and

¹³ A paper read at the Congress of the Royal Economic Society in London, Jan. 11, 1912.

¹⁴ Board of Trade Report on Railways in Austria and Hungary, p. 85.

the traffic managers and general managers at proportionate salaries, when our cabinet members, including the Postmaster-General, receive but \$12,000.

In Germany and Japan, the royal family and great officers of state rank first in the social hegemony, officers of the army next, and other public officials next. Therefore, for a railway officer, while keeping his railway position, to be translated into a public official also was a social advantage, which largely compensated for a reduction in salary. Doubtless the same thing would be true in England. The important non-political offices in the British civil service command influence, prominence and often knight-hoods and peerages. The government of the United States has nothing like these things to offer. In this country the social position and distinction incidental to a prominent position in the business or professional world is greater than those associated with any but the highest government offices.

It seems doubtful if our government would even try to retain the higher officers of the railways. We have not developed in our public affairs the respect and demand for the expert that the Prussians and Japanese have, and the English to a less degree. The Post Office is merely a large business concern owned and managed by the government. In Prussia, the higher officers of the Post Office, including the Postmaster-General, are permanent officials holding their positions because of special fitness. In England the Postmaster-General is a political cabinet officer, but most of the high officers of the department are permanent. In the United States, as has already been indicated, the Postmaster General, the Assistant Postmaster Generals and other higher officers of the department are political appointees. It is often said that our Post Office department is efficiently managed. But no one knows what is the investment represented by the parts of government build-

ings used for postal purposes or the facilities used by the Post Office department, or what interest should be charged against the department for their use. The absence of these data spells inefficiency. The only expenses known are the direct operating costs; and these usually exceed the earnings. Many of the subordinate officers and employes are chosen, retained and promoted under civil service regulations; but in business concerns efficiency of management and operation are ordinarily determined only to a very limited extent by those in subordinate positions.

The most hopeful view rational is that under government ownership in the United States it might be rather exceptional for men to be appointed to important railway offices for political reasons, and the general rule for men to be appointed who had got their experience and training in the service. It is too much to hope that even if politics did not greatly influence appointments and promotions the ability and efficiency of the official personnel would equal those of the present one. Both the incentive and the opportunity of able men would be less. Private railways are run for profit. Profits may be increased, on any rates, by developing more business or by making improvements in plants or methods that will reduce expenses. The officers are tested by the extent to which they do these things. If they get good results they are retained or promoted roughly according to the results. If they do not do as well as candidates for their positions or their rivals for promotion, they are not promoted or are retired. It is a cruel regimen, but a wholesome one. Nowhere else does this process of natural selection work more steadily or remorselessly than on American railways. It goads freight solicitor and traffic manager, mechanical officer and engineering officer, superintendent and general manager, vice-president and president to ceaseless study

and effort to increase traffic and reduce construction, maintenance and transportation costs.

Now, government concerns do not depend for their solvency on the way they are managed. They can always call on the taxpayers; and, therefore, the pressure for results is less. Furthermore, under government ownership, the management could not use the same free hand as a private management can in advancing in the official ranks the fit and keeping out or weeding out the unfit. Even the best civil service rules keep out only the wholly incompetent, not the comparatively incompetent. Once the comparatively incompetent get into public service it is impossible to get them out, for under civil service rules it is necessary, in order to remove men, to prove not merely that they are not competent, but that they are positively incompetent. It would be still harder to keep the comparatively fit from being promoted according to the rule of seniority, which usually governs in the civil service, to important places when it was desirable that those who were superlatively fit should be promoted over their heads. Even in our Army and Navy, where the system of education and training is excellent, the officers ordinarily are promoted according to seniority. In every war the evil effects become manifest. It is found that most of those who have been advanced to high places are unfit to command great fleets and armies; and it is necessary, in order to secure the highest efficiency, to advance over them younger and abler men. But for the stress of dire public necessity these abler men would not rise to high rank until they were old, or perhaps never at all.

There would be as much need for the ablest men in the most important offices on the state railways as in the Army and Navy in time of war. But no great emergency would show the need so clearly. Seniority would govern to a far greater extent than it does on our private railways.

The best men would not so often get the most important places. As merit would count for less, there would be less striving by men all along the line to prove their merits. "This system (that of selecting men under civil service regulations) is still woefully deficient as compared with the methods used in private business. That faculty of judging human nature and selecting just the right man for a particular type of work, which is the most valuable asset of the business man, is wholly lost to the government. The man who passes with most credit the formal civil service examination may be, often is, wholly lacking in initiative, push and executive ability, and yet no better method of selecting government employ  s has ever been devised."¹⁵

Inefficiency in the personnel leads to waste; dishonesty to "graft," which is a euphemism for theft. Extensive grafting may cost as much as incompetency. There has been a good deal of grafting on our railways. Its most costly form has been the organization by the officers and large stockholders of construction companies which charge exorbitant prices for building new lines. In many instances, enormous profits have been thus made. This form of fraud has now been almost abolished; but dishonesty of some kinds continues, sometimes on a large scale. In the aggregate, however, there is less than ever before. Seldom is it participated in by the higher officers. Most of them are vigilant in watching for signs of it, and quick to remove offenders from the service, which they seldom re  ter on the same or any other road.

While there formerly was much dishonesty in the management of railways, so also there was in our municipal, state and national governments. The stealing formerly

¹⁵ "Socialism and Its Menace," by President William H. Taft, in the *Century Magazine*, Oct., 1912.

done through construction companies is no more typical of what is done now on the railways than the old Star Route and whiskey frauds are typical of what is now done in the government service. There has been an increase of honesty in both governments and railways. Many think that government railroad management would be more honest than private railroad management. Many think the exact opposite. There seems no real evidence from which to draw a rational conclusion as to whether there would be improvement or deterioration in this respect under government ownership.

CHAPTER VII

EFFECTS OF CONSOLIDATION UNDER GOVERNMENT OWNERSHIP ON ECONOMY OF MANAGEMENT

As already has been remarked, an argument often made for government ownership of railways in the United States is that the consolidation of the railways into a single system, which public ownership would bring about, would render it practicable to introduce many important economies. Having considered in the previous chapter the effects that the adoption of public ownership probably would have on the organization, and especially on the official personnel, of the railways, we are now better prepared to consider what results probably would be attained as a result of consolidation.

One of the savings it is contended could be effected, would be in the salaries of officials. A substantial economy could be made, it is said, by reducing many of the large salaries now paid and by abolishing many official positions which consolidation would render superfluous. The abolition of superfluous offices would eliminate the salaries of the clerks in them as well as of the officers.

It is remarkable how little effect such changes could possibly produce on operating expenses. The salaries of all railway officers in 1910 were \$37,448,770. The wages of general office clerks were \$58,176,906. The salaries of the officers were only 3.4 per cent. as much as the wages paid to the 1,684,552 employ  s other than officers;¹ only

¹ The total compensation of employ  s, excluding officers, was \$1,106,276,536.

2 per cent. of the total operating expenses;² and only 1.3 per cent. as much as the total earnings.³ The compensation of officers and general office clerks together was 5.2 per cent. of the total operating expenses and 3.4 per cent. of the total earnings. Therefore, any feasible reduction in the number and compensation of officers and their clerks, if other things remained equal, would cause only a relatively small reduction in operating expenses.

Probably other things would not remain equal. Ample and able supervision is vital to efficiency. The compensation of officials and their clerical staffs is the wage paid for supervision. Some reasons have been given in the preceding chapter for believing that the officers of a government railway system would hardly be as able and hard-working as are those of railway corporations. This would impair the quality of the supervision. A reduction also in the number of officers would impair the quantity of it. A reduction of either the quantity or quality of supervision would cause wastes far exceeding the saving made.

Experience with government ownership of railways in other countries and with public affairs in this country indicates, however, that there probably would be, not a reduction, but an increase in the number of both officers and clerks; and that, in the end, the amount spent for supervision probably would not be reduced and might be increased. State railways commonly pay smaller salaries to their officers than private railways, but more of them. There are 96 persons receiving more than \$2,000 a year on the French State system as a whole, while on a large neighboring private railway, whose size is comparable, and of which the receipts are much larger, there are only 33.⁴

² The total operating expenses were \$1,822,630,433.

³ The total earnings from operation were \$2,750,667,435.

⁴ "State Railways in France," by Pierre Leroy-Beaulieu, Member

The Western of France is the last large railway acquired by a democratic nation. When it was added to the old French State system in 1908 the government did not economize in the official staff. It filled the places of the former officers of the Western with a larger number of political appointees.⁵ There was a corresponding increase in the number of clerks. "The single service of the Accountant General was increased by 70 persons directly after the re-purchase. This results not only from political pressure but from the excessive red tape so dear to state services. 'All the documents of the Western Company,' said M. Engerand, in the discussion upon this year's budget, 'were made by one copy. By the State they have to be made in triplicate, and you can calculate the useless work thus imposed on the staff when you learn that for the arrondissement of Caen the preparation of the pay sheets of the employés which, under the régime of the West, took nine persons three days, under the State administration, took a dozen persons six days.'"⁶

There have long been complaints about the "excessive proportions of the official staff, and especially the number of chief officers" of the Belgian State railways. "It is to these conditions," says M. Marcel Peschaud, "that the excessive amount of red tape in the management of the Belgian State railways is largely due." The complaints led to an "era of reform." Before this there was a gen-

of the Chamber of Deputies; a paper read at the Congress of the Royal Economic Society, London, Jan. 11, 1912, on "The State in Relation to Railways."

⁵ "Results of Operation of the French State Railways 1909 to 1911," by C. Colson, *Bulletin of the International Railway Congress*; reprinted in *Railway Age Gazette*, May 31, 1912, pp. 1205-1208.

⁶ "State Railways in France," by Pierre Leroy-Beaulieu, Member of the Chamber of Deputies; a paper read at the Congress of the Royal Economic Society, London, Jan. 11, 1912, on "The State in Relation to Railways."

eral secretary, five administrators, five inspectors-general, and eight directors of administration, a total of nineteen officers, receiving, altogether, salaries amounting to \$40,000. After the reforms there were three councilors, one general secretary, four administrators, six inspectors-general, and five directors of administration, a total of nineteen officers, who received \$40,000!⁷

The expenses of operating railways may be roughly divided into those of getting business, those of handling it, and those of maintaining the property. In getting business, the traffic departments use two chief means, advertising and solicitation. For advertising the railways of the United States spend about \$8,500,000 a year. It is argued that under public ownership this expenditure could be eliminated. Much of it is made to hold or attract competitive business. This could be saved. But a large part of it is spent to develop new business — for creative, not competitive, reasons. It draws the thrifty farmers of Northern Europe to America. It lures the New Englander from his rock-bound coast to the fertile prairies of the West. It carries the gospel of "back to the land" into the cities. It tells capitalists of undeveloped mining, lumbering and manufacturing resources. This class of railway advertising has been a potent force in peopling much of the United States. Together with the more strictly agricultural and industrial development work the railways have done, it has increased the products of farms, mines, forests and manufactures, and augmented the traffic of the railroads; and its curtailment would interfere more with the development of traffic than it would reduce operating expenses. Even if a large reduction were made in advertising, the effect would not be substantial; for its

⁷ "The Belgian State Railways," published in the *Revue Politique et Parlementaire*, and translated into English by Edwin A. Pratt, "State Railways," p. 63.

total cost is less than one-half of one per cent. of operating expenses.

Under a consolidated system much expense now incurred in soliciting business could be avoided. The outside traffic agencies maintained — agencies off the lines of the roads they represent — cost about \$20,000,000 a year, or one per cent. of total operating expenses. They could be abolished. It might be thought that the traffic associations, which cost \$1,520,000 a year, could also be abolished; but some such organizations probably would have to be maintained to check and harmonize the rates of different communities and sections.

Total traffic expenses, which include the costs of making and publishing rates, advertising, conducting industrial and immigration work and soliciting business, now amount to \$55,000,000. This is 3 per cent. of operating expenses. Altogether, a substantial reduction in them doubtless could be made by a consolidated railway system — just how large no one can say. The important point, however, is not what could be done, but what probably would be done. The strong incentive to economize would be wanting. Salaries constitute a large majority of traffic expenses; and, as has been seen, when railways have been nationalized there has more often been an increase than a decrease in the number and gross amount of salaries.

It is contended that government ownership, with the accompanying consolidation, would lead to important reductions in the cost of handling traffic. Undoubtedly, such reductions could be made. In large cities the competing railways usually have separate ticket offices. The rentals and payrolls of these offices in Chicago, St. Louis and Kansas City alone are nearly \$1,000,000 a year, over half of which could be saved by establishing joint offices. Similar economies could be made in other cities.

There are at present numerous and expensive duplica-

tions of passenger train service. For example, several lines run between Chicago and St. Paul. Four of them compete actively for through passenger traffic. Four times each day at the same hours each of the four starts a train from Chicago to St. Paul. Four times each day at about the same hours each starts a train from St. Paul to Chicago. This makes sixteen trains each way. Seldom are all the cars well loaded; seldom do the locomotives pull as many cars as they could. The quality of the service would be improved and its cost to the railways reduced if some of these trains were canceled and the rest spaced so that all the Chicago-St. Paul trains would leave Chicago at different hours and all the St. Paul-Chicago trains would leave St. Paul at different hours. The average operating expenses per train mile of the railways of the United States in 1911 were \$1.54. Suppose that for every passenger train taken off between Chicago and St. Paul, there could be saved \$1.00 per train mile. If, then, only five trains each way, or less than a third of those in question, were canceled, the economy would be \$4,220 per day, or \$1,540,000 per year. There are similar possibilities of saving in the passenger service between many cities.

The freight business of the railways of this country yields three times the earnings the passenger business does. Probably consolidation would not make practicable as large savings in proportion in the freight as in the passenger service, but it might make possible larger absolute economies. It has been claimed that competition leads to much economic waste by causing the railways to send freight by long, circuitous routes.⁸ A large amount of the

⁸The best discussion of this subject is "Economic Waste in Transportation," by Prof. W. Z. Ripley, in *Political Science Quarterly*, Vol. XXI, 1906, pp. 381-417. Mr. Ripley's paper is reprinted in his "Railway Problems."

roundabout routing formerly done in this country was due to bidding for traffic with secret rebates; and among the good results of the abolition of rebating has been a reduction of this practice. Such routing does not always involve waste. A long line which is not being worked to its capacity can handle additional business at less additional cost than a shorter and more direct line which is being worked to its capacity. However, a very substantial saving could still be made by reducing indirect routing. To this is attributed a large economy on the Prussian State railways.⁹

Consolidation would make it practicable to reorganize and rearrange all the terminals at large cities as joint terminals, which would effect a large saving. The railways have worked out a plan under which they all use each other's freight cars; and the expense of transfers of freight at junction points is avoided. By the complete pooling of freight cars a consolidated railway system could make a further reduction in the capital invested in freight equipment and in the cost of handling it. A central car distribution office receiving reports as to traffic conditions everywhere might move equipment to and from different sections in accordance with their needs, as the Pullman Company does with sleeping cars; and much of the waste of hauling freight cars empty and having thousands standing idle most of the year could be eliminated.

Doubtless under government ownership many of the economies here mentioned as possible would be made. But our railways already long have been working along these lines. The past combinations of small railways into

⁹"The Nationalization of Railways in Prussia: Its Causes and Sequels," by Hermann Schumacher, Professor of Economics at the University of Bonn, a paper read at the Congress of the Royal Economic Society, London, Jan. 11, 1912, on "The State in Relation to Railways."

great systems have resulted in enormous savings, and in many cases groups of roads have made savings approximating those that could be gained by complete consolidation. Groups of roads publish their tariffs jointly. Some joint city ticket offices have been established. In some instances agreements have been made to curtail wasteful passenger service. Joint terminals are operated in a number of cities. Still more could be done under private ownership by concerted action of the various groups of railways; but such action in some forms is in violation of the anti-trust laws and the anti-pooling section of the Interstate Commerce Act; and in most forms it meets public opposition.

While undoubtedly under government ownership, there would be some important economies made in the handling of traffic that are not practical under private ownership there probably would be increases in expenses in other directions. The greatest economy in operation compatible with good service requires the most efficient handling of money, materials and men. It consists in getting the largest and best return for each dollar spent, whether in the purchase or use of equipment and supplies, or in the employment of labor. The beginning of operation may be said to be the purchasing of the physical means of operation. Purchasing is bargaining—trading. A purchasing agent who is a good trader is invaluable to a large business. To be a good trader he must keep thoroughly posted on the conditions in the market in which he is buying, and have the knack, partly developed by experience, partly a natural gift, of always getting the lowest prices. To make full use of this knack he must have adequate incentive and much freedom of action. The main incentive of the purchasing agent of a private concern is gain. Primarily, he gains for the company. Secondly, he gains for himself; the better buyer he is the more he is

paid. The incentive of the purchasing agent of a government department is less. Governments are not so keen to get bargains, and the officers and employés of governments are usually paid salaries arbitrarily fixed by law and not in proportion to their individual merits. The freedom of action of buyers for government departments is usually hampered by detailed rules and regulations—"red tape." Furthermore, governments have a bad reputation for being arbitrary in their dealings with those from whom they buy. Slight differences regarding prices or the quality or condition of the goods bought cause protracted delays in settlement. Therefore, sellers are apt to charge governments higher prices than other purchasers. These circumstances, together with the fact that the government purchasing agents probably would be men of relatively less ability than those of the railway companies, indicate that a government railway system would pay higher prices in proportion than our private railways do. The annual operating expenses of our railways are over \$1,915,000,000.¹⁰ Of this amount over \$1,208,000,000 is spent in wages and salaries; and over \$707,000,000 for materials—equipment, rails and other supplies. In addition large sums are spent for materials that go into extensions and permanent improvements and are charged to capital account. Therefore, other things being equal, a relatively small loss of skill in buying would cost millions of dollars annually.

But other things might not be equal. The value obtained for each dollar spent depends not only on how buying is done, but also on whether the things bought are designed in the best way for economy. It is practicable to have things so designed and standardized for a large con-

¹⁰ Interstate Commerce Commission, "Statistics of Railways in the United States, 1911."

cern as to enable it to buy much more cheaply than a small concern. It costs less to make a large tonnage of rails, or a large number of locomotives or cars according to the same specifications than according to several or many specifications. Furthermore, when equipment and structures are built to a limited number of standards it is not necessary to carry as many and as various parts for repairs as when numerous standards are used. This reduces the investment that must be made in the supplies carried. A government railway system in this country would equal, and in time exceed, in size, all the present systems combined. By judicious but progressive standardization of structures and equipment it could reduce the cost of many of them to the makers, and with even fairly skillful buying, to itself.

Professor Schumacher attributes the efficiency of the Prussian-Hessian lines under government ownership mainly to consolidation. In the smaller German states, he says,¹¹ "Nationalization has proved a bad bargain. . . . This is because the railway systems of the South German states are not sufficiently large to afford the same possibilities of effecting economies as those afforded by the Prussian State Railways. . . . But after all, the most important point is that the broad basis of combined working on a large scale, suited to the peculiar nature of railways, made it possible (in Prussia) to carry through consistently the economic principle in administration, working and construction." He puts especial emphasis on the part played by the increased standardization made possible by consolidation. "The unification of construction, both in the permanent way and in the rolling stock, has also exercised an influence on the manufacturing industry, which might be

¹¹ "The Nationalization of railways in Prussia: Its Causes and Sequels," by Hermann Schumacher, Professor of Economics at the University of Bonn.

described as standardization on the largest scale. Thus, in 1885, a uniform standard type of rail was introduced, and since 1907 the type of construction for trucks, especially as regards the equipment with brakes, pipes, and the like, has been made uniform, not only on all Prussian railways, but on all German railways generally. This technical simplification of the permanent way, the construction of locomotives and carriages, the signaling, etc., has contributed a great deal to develop enterprises on the largest scale in the industries supplying railway materials. The uniformity of demand thus arrived at has cheapened the production in many ways; the introduction of the standard type of rails, for instance, considerably relieved the rolling mills in steel works. Petty and expensive specializing in manufacture — a relic of the past — was thus once for all done away with. This was of still greater importance for the development of the German iron industry than to the finances of the Prussian State railways."¹²

It is a point often overlooked in discussions of government ownership, however, that economies of the kind often attributed by Professor Schumacher and others to consolidation under government ownership in Prussia, are made in the United States under private ownership by coöperation between the various railways. This coöperation is carried on largely through numerous national associations composed of the railways themselves or of their officers. Some of the most important associations are international, including the Canadian and other roads. The way their members, although competitors, place the results of their investigations and experience at one another's disposal, without reserve and without price, affords, perhaps, the best example of commercial free-masonry in the

¹² "The Nationalization of Railways in Prussia: Its Causes and Sequels," by Hermann Schumacher, Professor of Economics at the University of Bonn.

world. By the investigations and reports of their committees, the free and full discussions at their meetings, the "recommended practice" which they adopt, and their very substantial success in getting the railways to follow the practice recommended, these organizations exert a potent influence for efficiency.

At the head of the railway associations is the American Railway Association, composed of the higher operating officers of practically all lines. In the mechanical field are the American Railway Master Mechanics' Association, the Master Car Builders' Association, the Traveling Engineers' Association, the International Railway Fuel Association, the International Railway General Foremen's Association and several other organizations. There is no problem of the design, construction or repair of locomotives and cars, the operation of shops or the use of fuel which they do not study. In the engineering and maintenance-of-way field are the American Railway Engineering Association, the American Railway Bridge and Building Association, the Roadmasters' and Maintenance of Way Association. In the transportation field are the Association of Transportation and Car Accounting Officers and the American Association of Railroad Superintendents. In the signal field is the Railway Signal Association. Many more such organizations might be mentioned. Their membership combines the practical and theoretical. They are composed chiefly of active railway men, many of whom are technically educated; but the mechanical and engineering associations also include, at least among their associate members, many of the leading professors of technical subjects in our universities.

The results of the work of these associations are as various as they are valuable. Freight cars are built, equipped and repaired to such nearly uniform standards that they circulate freely throughout the United States

and Canada, a territory exceeding Europe in area and mileage of railways. This uniformity is steadily maintained and increased by the investigations and action of the Master Car Builders' Association, and by the supervision of the Interstate Commerce Commission in the administration of the United States Safety Appliances Laws. The investigations and recommendations of the Master Mechanics' Association unify and improve the design, construction and repair of locomotives. Rails are ordered by roads throughout the country according to practically identical specifications. Most of the railways use sleeping cars built and owned by the Pullman Company, which is the most effective means possible for causing these cars to be designed and constructed according to uniform standards.

Examples of this kind might be greatly multiplied. In consequence of "this technical simplification of the permanent way, the construction of locomotives and cars, the signaling, etc.," as Professor Schumacher calls it, the results gained under private ownership in the United States have been similar to and perhaps greater than those gained under public ownership in Prussia. The industries developed here for making locomotives, cars, rails and other equipment and supplies are much larger than those in any other country, and while the prices of materials and equipment are often more here than in Europe, this is mainly because our manufacturers, like our railways, must pay higher wages than the manufacturers of Europe. In many cases our manufacturers of railway equipment and supplies are able, in spite of the higher wages that they pay, to compete successfully in the markets of the world against the manufacturers of Europe. It is not meant to imply that standardization has been carried as far here as in Prussia. Probably this is not the case. But our railway system is much larger than that of

Prussia; its purchases are much greater; and, therefore, a given amount of standardization here will cause as great a total economy as a larger proportion of it in Prussia.

Doubtless "this technical simplification of the permanent way, the construction of locomotives and carriages, the signaling, etc.," on our railways could be increased if they were consolidated under government ownership. Doubtless some immediate economies could thus be made. But if standardization were carried very much farther it is questionable if in the long run the results would be good. Progress in design is more important than standardization of design. And there is a limit beyond which standardization cannot be carried without harm. "Variation from type" is as essential to evolution in industry as in biology. Every improvement is caused by somebody doing something better than it has been done before. To do a thing better involves doing it differently. The aggregate of these upward "variations from type" is progress. Excessive standardization would hinder them; complete standardization would stop them.

The danger of excessive standardization and of consequent stagnation would be greater on a consolidated railway system than on numerous independent and competing systems. Where there are numerous railways comparison and competition stimulate the management of each to try to make a better "showing" than the others. One experiments with one new design or method, another with another. One tries steel cars, another metal ties; one concrete bridges, another automatic block signals. One increases its train load by reducing its grades, another by electrification, another by using more powerful engines. Every railway is thus an experiment station. The "variation from type" that is unprofitable disappears. The one that increases efficiency survives. Imitation and cooperation extend the improved method or device or

structure to other railways until it becomes "recommended practice" or "standard." Somebody then begins to improve on the improvement; and the process is renewed. This industrial evolution works better under conditions of competition than monopoly. While each management rejects some new things, while they are in the experimental stage, that others accept, each also accepts some that others reject. Practically all that are worthy are thereby enabled to get past the experimental stage.

The number that would get past this stage under a consolidated private management would be much less. The number that would get past, or even into, the experimental stage under a consolidated government system would be still less. In the first place, it requires ability to discern advantages in new things; and reasons already have been given for believing that the official personnel of government railways would be inferior to that of private railways. Then, experimenting involves risk. Private enterprise does the experimenting, or employs others to do it, and takes the risk in the hope of increasing profits. This incentive is wanting in government business. Therefore, "variation from type," with the improvements it causes, is less common in enterprises managed by governments than in enterprises managed by companies. "With all the talent that has been put into the public administration of industry it is a salient fact that the important inventions have been made in countries enjoying private enterprise. The telegraph, the telephone, the electric light, the railroad track, the locomotive, the air brake, the block signal were all introduced by private companies. In most cases it took government experts from twenty to twenty-five years to discover them after they had been in use on private lines."¹³ Standardization of

¹³ President A. T. Hadley of Yale University, "Economics," p. 400. See Hugo R. Meyer's "Municipal Ownership in Great Brit-

the design of track, equipment, signaling apparatus, etc., might be carried farther by a consolidated government system than by the various private systems. But the private systems of the United States already have effected the bulk of the economies obtainable by standardization in the present stage of the art of transportation; and progress in design, which is far more important than standardization of design, probably would be hindered by government ownership.

A remarkable example of failure to do the standardizing most needful for economical working and public convenience is afforded by the government railways of Australia. In 1846 Mr. Gladstone, then Colonial Secretary of Great Britain, recommended that all the Australian lines adopt the 4 foot 8½ inch gauge. The advice was not heeded. The different colonies built to, and still have, three gauges, not counting that of the light railways of Victoria.¹⁴ The railways of the United States formerly

ain" for numerous examples of how the development of municipal utilities, from causes such as those mentioned in the text, has failed to keep abreast of that of public utilities owned by private companies.

¹⁴ The mileages of the different gauges are given in the following table:

State or Line	2 ft. 6 in. Miles	3 ft. 6 in. Miles	4 ft. 8½ in. Miles	5 ft. 3 in. Miles
New South Wales	....	....	3,721	....
Victoria	122*	....	....	3,401
Queensland	....	4,287**	....	....
South Australia	....	835	....	622
Western Australia	....	2,375	....	....
Northern Territory	....	145	....	....
Port Augusta-Oodnadatta ***	....	478	....	....
Totals	122	8,120	3,721	4,023

* Light railways.

** Including private lines.

*** Transferred by South Australia to the Commonwealth for the proposed transcontinental line to the Northern Territory.

were greatly diversified in this respect. There were gauges of 6 feet, 5 feet 6 inches, 5 feet, 4 feet 10 inches, 4 feet 9 inches, 4 feet 8½ inches, and narrower ones. The situation was remedied by voluntary coöperation. The expense and inconvenience caused led to a conference of railway presidents in 1885, and uniformity was established the next year. All efforts to get the Australian governments to do likewise have failed. Traffic moving from a point in New South Wales, for example, to one in Victoria or Queensland must be transferred at the border; and the transfer charges are 36 to 60 cents per ton. Sometimes goods moving between two points could be carried most directly, partly over the line of one colony, partly over the line of another. But this would require two transfers; and it may be cheaper to haul it roundabout on one line.

One obstacle to standardization has been the desire of each colony to hold for its own roads all the traffic originating in its territory. Another has been the commercial rivalries of the large cities on the coast. As long as the gauges are different Sydney, Melbourne and Brisbane can each hold more securely its practical monopoly as the market place of its colony. The formation of the Commonwealth government and the growing sense of nationality, together with commercial and industrial needs, will force standardization sooner or later. Its cost when it comes will be much greater than it would have been if it had been carried out earlier.¹⁵

¹⁵ Since the text was written the chief engineers of the Australian State railways have had a conference and recommended the adoption of a uniform gauge of 4 ft. 8½ in. They estimate that the total cost of bringing about a standard gauge will be \$180,245,000, divided between the different colonies about as follows: Queensland, \$61,000,000; West Australia, \$50,000,000; South Australia, \$29,195,000; Victoria, \$30,000,000; Commonwealth Territory, \$6,000,-

Larger economies can be effected in railway transportation by increasing the amounts of traffic handled in each car and each train than in any other way. To secure the largest practicable carloads and trainloads requires, among other things, constant endeavor to so develop the design and construction of track and equipment as to make them adapted to handling traffic in large units. The railway officers of America have done their work along this line so well that the locomotives of our railways have become the most powerful, their cars the largest and the tonnage hauled per car and per train the greatest, in the world. These developments have been helped by the large proportion of bulky commodities in the traffic of this country, and by the long distances that the size and commercial development of the country enable traffic to move. But they have been mainly due to the pressure of the managements for economy, to the engineering and operating skill this has developed, and to the coöperative action of the various railways. That there has not been the same success in introducing economical methods for handling passenger traffic has been due to the kind of competition in passenger service already described and to the relative sparseness of the population. A dense population is necessary to a dense passenger traffic and to economical handling of such traffic.

000; New South Wales — where the gauge favored now prevails — \$472,000. The estimated total cost of unifying the gauges is almost 25 per cent. of the total cost of construction and equipment of the railways up to 1911.

CHAPTER VIII

INFLUENCE OF POLITICAL AND LABOR CONDITIONS ON ECONOMY OF MANAGEMENT

THE managing of a railway may be said, in a sense, to begin with the selection of the territory in which it is to be built. It later includes the selection of the places where extensions and improvements shall be made. It is one of the complaints directed against private capital that it builds and improves only where there seems to be a good chance of getting profits. Public management, it is said, would consider only the public interest.

It would seem, however, that the principle guiding private capital is best adapted to promoting the permanent interests of the public. Private capital is most certain to profit by improving or building where there is the largest traffic waiting to be handled or developed. These are usually the places where the public welfare most demands additional facilities. And where facilities are most needed for developing potential or handling existing traffic they can be worked most economically in proportion to what they earn. Government management controlled by real considerations of economy and public welfare would, therefore, usually build and improve in the same places as private capital guided by the desire for profit.

There is one very important exception. Private capital often has built parallel lines where one line could handle the business. Paralleling an existing line may profit the promoters, but it hurts the competing line, causes economic waste, and is a public detriment. One good re-

sult of government ownership is that it prevents this waste. But it can be prevented by regulation of private management. This is now done in New York, Wisconsin and some other states, where promoters cannot build without certification by public utility commissions that their lines will serve public convenience.

Where improvements in railway plants shall be made is of importance in all countries. Where new lines shall be built is of little importance in old, populous and developed countries, like England and France, but of great importance in new countries like the United States, Canada, Australia and Argentina, where much new construction is needed to people and develop large areas. While a government management ought, ordinarily, to make improvements and build new lines where private capitalists would, it is not likely to do so in all cases, especially in democratic countries. In such countries where improvements and extensions shall be made must be settled by the lawmakers or by some body created by them. There is bound to be pressure on the lawmakers to spend capital for the benefit of their respective communities. Expenditures obtained by sectional pressure, and not based on commercial considerations, are usually inimical to national interests.

The evidence indicates that in Prussia improvements and extensions have been made wisely. When the government began buying the private railways there was a disparity between the mileage in the Western and in the Eastern provinces. This has been corrected. In the Eastern provinces in 1883 there were 5.46 miles per 100 square miles as compared with 11.33 miles in the Western provinces. In 1910 the ratio was 14.51 to 18.87. That the new mileage has been built wisely is indicated by the financial and operating results of the entire system. But "Prussia is Prussia," as Mr. Acworth says.

Benevolent despotism and democracy often do not do business in the same way. In democratic Australasia there has been complaint that the location of new lines often has been determined by political "log-rolling." To this cause is largely attributed the financial failure of the State railways of New Zealand, Italy and several other countries.¹

There is good reason to fear that the same influence would be operative on state railways in the United States. Political influence now determines very largely the places where public buildings shall be erected and army posts and naval stations located in this country. The illustration most in point is that afforded by the expenditures

¹ See an article on "Railways in New Zealand," by Professors James Edward LeRossignol and William Downie Stewart, *Quarterly Journal of Economics*, Aug., 1909. Also an article by Sir Robert Hamilton in the *Nineteenth Century*, Aug., 1892. "An appreciable amount," says the latter (of the money spent by Australia on public works) "has undoubtedly gone on works for which there was no immediate necessity, and some of it on work for which there was no necessity at all." "There are not wanting," he adds, "lines made in districts where there is little produced and distributed and with small and practically no possibilities of development."

The Australian correspondent of the *London Times*, in an article in the issue of that journal for May 24, 1913, referring to conditions on the Australian railways in their early history, said: "The control of these government railways was in all the colonies vested in a Minister, under whom a commissioner managed the actual working of the enterprises. In this system political influence naturally flourished. Not only were railways constructed so as to maintain a ministry's majority in Parliament, but ministerialists obtained contracts for supplies, and even jobbed their constituents into places and procured the adoption of their own inferior inventions on the lines—witness the notorious Woods water-brake of the early eighties in Victoria."

On the question of political influence on the construction and subsequent results of the State Railways of Italy, see an article by Professor Hugo R. Meyer on "The Disastrous Results of State Railway Building in Italy," *Journal of Political Economy*, June, 1906.

for the improvement of rivers and harbors. To be of public value these expenditures must be confined to places where there is the best chance, or at least some chance, of developing traffic. They should be made systematically, first on the principal harbors and the main arteries of the inland waterway system, and elsewhere only later, if at all. Instead, they are made almost without any system. Over \$600,000,000 has been spent on inland waterways in this country, and the only efficient ones we have as yet are those provided by nature — the Great Lakes. While the total expenditures have been large, those on the main projects have been inadequate for their purpose. Millions which might have accomplished something if expended on a few national projects have been wasted on numerous local projects.

A striking description of the way in which appropriations for public improvements are made has been given by Senator Burton of Ohio.² "The worst element of our legislation is its utter selfishness. . . . Local and personal interests are advanced without regard for the welfare of the nation. . . . The mobile army of the United States is scattered among forty-nine posts. Why has the army been divided into this absurd number of inefficient units? Secretary Stimson replies, 'Local and political influences.' The same situation prevails in the various departments and is equally conspicuous in the

²"The Scandal of the Federal Appropriation Bills," by Theodore E. Burton, United States Senator from Ohio, *World's Work*, Feb., 1913. Senator Burton is unusually well equipped to describe the way that appropriations for public improvements are made. He served in the House of Representatives for eighteen years; was chairman of the Rivers and Harbors Committee, and since he has been in the Senate has been Chairman of the Inland Waterways Commission and of the National Waterways Commission, which were created to investigate the best means for developing the inland waterways of the United States.

navy. . . . We have eleven navy yards of the first and second class, while England with a navy twice as large as ours, has but six. Yet we do not possess a single navy yard where we could at one time dock a squadron or a fleet. . . . For years the officials of the navy have sought to establish that branch of the service upon a basis of military efficiency and their efforts have been embarrassed by the selfishness and insistence of local interest. . . .

"For years we have been struggling under a vicious system of river and harbor improvements. For instance, the River and Harbor bill of 1910 contained items favoring 296 out of the 391 Congressional districts. This bill was a masterpiece of geographical distribution and a striking tribute to the cohesive power of legislative log-rolling. Even the obstacle offered by mountains of considerable size did not prevent certain portions of the country from being represented in this bill. . . . This policy of piecemeal appropriations encourages extravagance and the adoption of injudicious and wasteful projects merely for the purpose of spending money in the greatest possible number of districts. . . . We will never have a rational system of public works under present methods. . . . And yet the scandal of our river and harbor appropriation bills is no worse than that of our public buildings. Magnificent public buildings are erected in small towns and inaccessible county seats, not because they are needed, not because public service will suffer from lack of them — but because a Congressman feels that he should bring home something to his district from the public treasury to show his constituents that he is alive to their welfare and is alert at Washington. . . . The most discouraging aspect of the system is that instead of improving it is constantly growing worse. . . .

"And yet I do not think in the last analysis that the blame really lies with the individual legislator. . . .

Week after week at least 75 per cent. of the mail received by a Congressman consists of letters from constituents who are urging bills or claims of a selfish nature, either local or purely personal. . . . Political preferment is the reward promised the disciple of extravagant appropriations. Meanwhile, local obloquy is visited on those in public life who advocate economy. . . . It is a strange phase of the psychological moods of the American people that, while individual graft by an official, or other person, meets with prompt and just condemnation, graft, or something very similar to it, accomplished by appropriation from the federal treasury for the benefit of local communities, brings only wide approval." There is no good reason for believing that a similar course would not be followed in improving and extending a government railway system.

We have already had more experience with public management of railways in the United States than most people are aware; and there is much evidence of the influence politics exerted on it. As has been shown in Chapter III, North Carolina formerly operated the North Carolina Railroad, which is now leased to the Southern Railway, and the Atlantic & North Carolina, now leased to the Norfolk Southern. Speaking of the North Carolina Railroad, the historian of state ownership in North Carolina has said: "The survey of this road tells why its operation by the state could not be a complete success. Beginning at Goldsboro, its eastern terminus, it runs in a North-westerly direction for nearly seventy-five miles, until it reaches the present city of Durham. The course there changes to nearly West for some sixty miles, until Greensboro is reached, about forty miles from the Virginia state line. Then it makes a great curve until the course is changed to nearly South for eighty or ninety miles, ending at Charlotte, almost on the South Carolina state line. In

its course the road makes almost a complete horseshoe.

"The project passed the General Assembly by the vote of the presiding officer, Hon. Calvin Graves. Unless the road had gone to the home of Governor Morehead, had passed by Hillsboro, the home of Secretary of the Navy, Governor, and United States Senator Graham, and other distinguished men, had taken in the State capital in its route, and terminated in the midst of the descendants of the signers of the Mecklenberg Declaration of Independence, it could not have come into existence at all. So long as the State attempted to operate it, the political factions along its route had to be appeased by seats in its directorate, and favors more or less discriminating were a necessity both to individuals and to influential centers."³

Regarding the state management of the Atlantic & North Carolina Railroad, the same authority has said: "This road has now been operated by the State of North Carolina for nearly half a century, in war and peace, by Democrats, by Republicans and by Fusionists — each with varying degrees of failure. The private stockholders for years have pleaded for a lease, or for anything to avoid a continuance of political mismanagement. During these many years no dividend has been earned, though one or two presidents declared dividends of one or two per cent. per annum for political effect, when every cent should have been used in betterments. The stock's value ranged from ten to twenty-five cents.

"Finally, under the administration of Governor Aycock, it became known that the administration had determined to heed the cries of the private stockholders and the sound business judgment of the people of the State, and lease this last of the State's railroads. A great sigh

³ "State Ownership in North Carolina," by T. B. Womack, formerly Judge of the Supreme Court of North Carolina, *World's Work*, Dec., 1906.

of relief went up from mountains to sea. The lease was not effected until after an attempted sensational receivership in the federal courts and litigation by those who wanted to hold on to the teats. During this litigation, many evils of political management were made public, among others the fact that every administration for years had employed prominent politicians in various sections, remote from the railroad, as 'local counsel,' thereby enabling them to receive free passes within the letter, but against the spirit, of the state statute prohibiting free passes."

The State of Pennsylvania, in the early history of railways, owned and operated the Philadelphia & Columbia Railroad, which was sold in 1855 to the Pennsylvania Railroad. William Bender Wilson, the historian of the Pennsylvania Railroad, has thus described the management of the Philadelphia & Columbia under public ownership: "The individual transporter who did not dance when the politicians in charge of traffic piped was placed at a great disadvantage. His cars were not moved until after his competitor, who was a partisan, reached market; classifications were interpreted against him, and his cars were condemned by inspectors; every effort was made to compel his adherence, failing in which he was run out of business or badly crippled. The free pass system originated on the state works, and grew out of the assumption by public officials that they had a right to pass over the public highways, in going to and from the capital, free of tolls. County officials soon claimed that they were entitled to the same immunity in going to and from their respective county towns, and political hangers-on . . . enrolled themselves under the banner of free transportation. . . . It became a potent factor in corruption, and reached such an extent that transporters who would do certain political work at an election would have their

tolls rebated to an extent that nearly always reached a refund of the entire amount paid. The state debt grew and grew, until bankruptcy stared the people in the face."⁴

When the government wastes money on fruitless waterway projects it has to pay interest on the investment. When it made wasteful expenditures on railway lines it would have to pay both interest on the investment and the expense of operating them. Political "log-rolling," as we have seen, both causes money to be spent where it is not needed, and prevents enough of it from being spent where it is needed. Under government ownership a railway passenger station would be a public building, and if a "log-rolling" policy were followed large sums would be wasted on costly stations where they were not needed. If appropriations for the enlargement of railway yards, the building of additional tracks, the construction of new lines, etc., were parceled out among the various Congressional districts, as are appropriations for waterway improvements, the results can be readily conceived. The expenditure where it was not needed, and its diversion from where it was needed, would increase both fixed charges and operating expenses. The expenditures that could be made wastefully on a national railway system would be many times greater than those on rivers and harbors, public buildings, army posts, naval stations, and so on. No one can estimate how much more fixed charges and operating expenses would thus be increased under public than under private management, but that the difference would be very great, unless the attitude of Congress and the public toward government appropriations was revolutionized, is plain. It easily might more than offset any saving that might be

⁴Quoted in "State Ownership of Railroads in Missouri and Pennsylvania," by C. M. Keys. *World's Work*, Dec., 1906.

made because the government could borrow capital cheaper than corporations. When private capital makes unprofitable investments in railways they go through receiverships which readjust the necessary outgo to the possible earnings. When the government made unprofitable investments it would have to bear the burden in perpetuity. Governments cannot reduce their obligations by going through bankruptcy.

The engineering department of a railway provides the structures and equipment; the operating department works them. The main function of the engineering department is the engineering of materials. The main function of the operating department is the engineering of men. The engineering of men is the most important and difficult function of management. Under state ownership all the employés of the railways of the United States would become employés of the government. The employés now number 1,700,000. Their total wages, not including official salaries, are \$1,168,000,000 a year, or nearly two-thirds of operating expenses. Therefore, if the adoption of government ownership produced any effect on the service rendered by labor or on the wages paid to it it would influence two-thirds of the total operating expenses. What effect government ownership probably would have on the relations between the railways and the employés, is, in consequence, a point having the most vital bearing on the question of whether the railways probably would be more or less economically operated under state than under private management.

About 423,000 of the employés are track foremen and track laborers, most of whom are foreigners from Mexico and the south of Europe. Generally they are unorganized; and their wages fluctuate according to supply and demand. About 267,000 employés are general office clerks, station agents and other station men. They also

are usually unorganized; and their wages are fixed somewhat arbitrarily by the managements, and are relatively low.

There are about 350,000 carpenters, machinists and other shop men. They are strongly organized, and act according to the well-defined principles of labor unionism. They press for collective bargaining, strict limitation of the number of apprentices, shorter hours and higher wages; resist piece-work methods and other means of "speeding up"; insist on seniority governing promotions, and usually demand the "closed shop." Their efforts to enforce their principles sometimes lead to extensive and costly strikes.⁵ The same statements apply to the 43,000 telegraph operators and train dispatchers, although their organizations are not so strong.

The 133,000 enginemen and firemen, and the 186,000 conductors and other trainmen, also are well organized. While they do not insist on the closed shop, about 90 per cent. of them belong to the unions. Work either for ten hours or on a train moving 100 miles entitles them to a day's wage. Their principles and methods are, in the main, the same as those of other labor organizations; and they also have gone out on many extensive and costly strikes.

While some large classes of railway employés are not organized, efforts are always being made to organize them. That all will be organized in time seems probable.

The normal relationship of the railway managements and the brotherhoods is one of truce rather than of peace. The unions have developed strong and skilled leaders.

⁵ The last of these was on the lines of the Union Pacific System, the Southern Pacific Company, the Illinois Central and the Missouri, Kansas & Texas in 1911. In this case some other crafts federated and struck with the shop employés.

The managements have had to develop men whose special strength and skill lie in their ability to cope with these leaders of labor. The demands and pressure of the organizations for higher wages and more favorable conditions are renewed before the expiration of every contract. The interim is largely occupied with harmonizing the management's and the men's interpretations of the "schedules," as the contracts are called. The negotiations for peace, backed with preparations for war, literally never end except when war itself comes.

In 1894 Congress passed the Erdman Act, providing for mediation by public officials, and, if this failed, for arbitration, to prevent lockouts and strikes of employes concerned with the operation of trains. The result of the long series of negotiations, mediations and arbitrations in recent years, the latter largely under the Erdman Act, is that the wages of the organized employes have been made much higher than those of the unorganized employes—higher, perhaps, than those of any other workingman. Many other advantages tending to increase the expenses of railway operation that the employes have not been able to get by these means they have gained by legislation.

The railway managers almost universally complain that the efficiency of organized labor has not, meantime, increased. More traffic is handled per employe; but this is attributed to improved plants and operating methods. However that may be, the skillful defense and dogged resistance the managements have made, and the persevering supervision that has been exercised over employes have tended to keep down expenses. It is not meant to imply that conditions of work have been improved too much or wages raised too high, but simply to indicate the fact that the policy of the managements has tended to promote economy.

The foregoing describes the labor situation on the rail-

ways of the United States. Would government ownership so change it as to reduce or increase expenses? We will best answer this if we consider the conditions in this country and the experience of other countries somewhat similarly situated.

This excludes Prussia. Prussia is a monarchy and the votes of its railway employes count for almost nothing in public affairs.⁶ Prussia does not allow its rail-

⁶The reason why this is so will be made apparent by a brief statement regarding the organization of the Landtag, or Parliament of Prussia, and the suffrage laws of that country. The Landtag is composed of a House of Lords and a House of Representatives. The House of Lords, like that of England, is made up of hereditary members, persons elevated to the peerage by the Kaiser, etc.; but it has greater influence on legislation than the English House of Lords. It "stands for loyalty to the crown and opposition to liberal change." The members of the House of Representatives are elected from districts similar to the congressional districts of the United States. The voters of each district are divided into three classes, each owning approximately one-third of the taxable property and each having one-third of the electoral power. "It need hardly be remarked that the division of the primary voters into classes according to the amount of taxes they pay gives a preponderance to wealth. The three classes are, of course, very unequal in numbers. It requires a comparatively small number of rich men to represent one-third of the taxable property in a district; it takes a considerably larger number of the well-to-do to represent another third; and the third will be represented by the great majority of the inhabitants of the district. Each of these three classes chooses one-third of the number of electors to which the district is entitled, and it is the electors thus chosen who elect the members of the House of Representatives." "The State," by Woodrow Wilson, p. 284.

"This three-class system of voting results in certain inequalities. In Prussia, for example, 15 per cent. of the voters have two-thirds of the electoral power." "Germany and the Germans," by Price Collier, *Scribner's Magazine*, Feb., 1913.

The railway employes belong to the third class, which, while containing 85 per cent. of the voters, has only 33 per cent. of the electoral power; and of course, they constitute a relatively small part

way employes to have unions. They have local committees; but the management determines how these committees shall be formed, where they shall be located, how and to whom they shall make their representations. Different committees may not hold regular conferences; or meet together at all without being convened and presided over by a railway officer. Prussia is governed by a military régime; and most of the railway employes are reservists who could be sent to their regiments on a moment's notice. The writer recently asked an official of the Prussian State railways what the government would do if any of the railway employes should form an organization and strike. He concisely replied, "They would be ordered to their colors. They would then be directed to return to their work. If they refused they would be shot for mutiny." Somewhat similar statements may be made regarding conditions in Japan, also a military nation, where the discipline of the employes of the state railways is of the highest order and their loyalty to the management "superlative."⁷

The United States is a non-military nation; no military discipline could be exercised over the employes of a government railway system. It is a democratic nation, and the number of railway employes is over 11 per cent. of the number of votes cast for president in 1912. All of the railway employes whose entry upon a strike would at once seriously affect the running of trains are strongly organized, and only the managements have kept the rest from

even of this third class. Necessarily, therefore, as indicated in the text, their votes count for very little in the public affairs of the country. Furthermore, as was shown in an earlier chapter, the administrative head of the Prussian railways, the Minister of Public Works, is a permanent official appointed by the Kaiser and not responsible to Parliament.

⁷ "The Railways of Japan," by J. E. Slater, in *Railroad Men*, May, 1913, p. 220.

being organized. Obviously, the experience of the Prussian and Japanese State railways with labor sheds no light on the probable developments under government ownership in this country. "Prussia is Prussia," Japan is Japan, and America is America.

The management of a government railway system in the United States would not have in the same degree the main incentive of corporation managements to struggle constantly to keep down expenses, viz., the desire to maintain or increase profits. The officers probably would be men of somewhat less strength and ability than those of corporations. They would have one great force to contend against that the managements of private railways do not have, namely, political influence. The conditions, in other words, would be more or less like those existing in other countries having more or less democratic governments and owning public utilities.

The last large railway acquired by a democratic government is the Western Railway of France. The transfer was made in 1908. Three years later, according to an official report to Parliament, the number of employes had been augmented by 5,280, or over 10 per cent. M. Leroy-Beaulieu says that certain increases occurring previously should be added, making the increases during this three years 7,200.⁸ There was an advance in operating expenses from \$29,598,600 in 1908, to \$44,480,400 in 1912, or 50 per cent., and most of this was in the wages of labor. In 1908 wages were \$15,815,200 and in 1912 they were \$26,633,600, an increase of 68 per cent. It is estimated that in 1913 total expenses will be \$45,147,400, an advance over 1908 of 52 per cent., and wages \$27,476,400,

⁸ "State Railways in France," by M. Pierre Leroy-Beaulieu, member of the Chamber of Deputies; a paper read before the Congress of the Royal Economic Society, London, Jan. 11, 1912, on "The State in Relation to Railways."

an advance over 1908 of 73 per cent. Meantime, freight and passenger rates have remained practically unchanged, and the gross receipts increased only from \$43,529,020 in 1908 to \$48,867,000 in 1912, or 12 per cent.⁹

About one-third of the increase in wages was due to additions to the number of employes and two-thirds to advances in the scale of wages. It is significant that the additions to employes were most marked in the classes that do clerical and other indoor work. Of the 5,280 additions officially reported in 1911 only 380 were in the track service and only 900 in the train service, while 3,000 were in the station service, and the office staffs were doubled and in some cases trebled. There were 1,526 employes in the Central Administration and in the Central Traffic Department of the Western Railway in 1908. In 1912 there were 2,587.

These conditions have been brought about partly by the strike on the railways of France in 1910, partly by a decline in discipline, partly by political influences. Some significant figures are given regarding the increase of sickness among the employes of the French State railways. In 1909 34 per cent. of those in the offices and terminals were granted sick leave; in 1910, 36 per cent.; and in 1911, 45 per cent. In 1909 45 per cent. of those in the transportation and maintenance departments were granted sick leave; in 1910, 48 per cent; and in 1911, 55 per cent. "Thus, more than one-half of the employes of the state railroads suffered from ill-health. The explanation is very clear. In case of sickness, the men receive full pay. Laborophobia is an irresistible illness for a certain category of railway men. It is a contagious disease, the more so in that it appears to afford nothing

⁹ "Nationalization of French Railways: Results of Public Ownership," by Yves Guyot, former Minister of Public Works of France, in the Annual Financial Review of the *New York Times*, Jan. 5, 1913.

but advantages."¹⁰ This and other evidence shows that increased wages have not produced increased efficiency.¹¹ They have been followed by the opposite result.

The railway situation in France is especially instructive because there we can study both the results of an important change from private to public management, and the results of public and private management under substantially the same conditions. The government has for thirty years worked what has been known as the "State Railway." This line has been operated under unfavorable conditions. It has only about 1,900 miles of line; its traffic is relatively light, and it does not enter Paris, its trains reaching that city over the tracks of the Western. Its relatively high cost of operation has been due, however, not only to its unfavorable situation, but largely to its management's ineffectiveness in dealing with its employes; and this has been due to the same causes that have produced similar effects on the recently-acquired Western.

¹⁰ "Nationalization of French Railways: Results of Public Ownership," by Yves Guyot, former Minister of Public Works, France, published in the Annual Financial Review of the *New York Times*, Jan. 5, 1913. The following table gives the figures in detail:

	1909	1910	1911
Offices and Terminals.			
Number of employes	3,852	4,844	4,515
Number on sick leave	1,291	1,582	2,044
Per cent. on sick leave	34	36	45
Transportation and Maintenance.			
Men employed	56,743	58,800	68,452
Number on sick leave	25,924	27,974	34,722
Per cent. on sick leave	45	48	55

¹¹ "If there is one point about which there is a general agreement among all those who are in direct contact with the employes of the nationalized railway, it is that these employes have never been less zealous and more fertile in complaints and recriminations."—"Results of Operation of the French State Railways 1909 to 1911," by C. Colson, *Bulletin of the International Railway Congress*; reprinted in the *Railway Age Gazette*, May 31, 1912, pp. 1205 to 1208.

There have also been increases in the total wages paid by the French private companies, but far from so large in proportion as those on the two state railways. There have been no comparable increases in the numbers of employés. The number of employés per \$1,000,000 of gross earnings on the state lines is 1,250; and on the private lines it is from 806 to 980, or from 22 to 35 per cent. less.¹²

Nothing increases railway expenses faster than a strike. It has sometimes been contended that government ownership would tend to prevent strikes. The state as well as the private railways of France were involved in the general strike in that country declared on October 12, 1910. France, although a democracy, is, unlike the United States, a military nation. The ministers on the very day the strike was declared ordered the men to join their colors for three weeks' military training. Disobedience would be punished by military law. The strike was broken; the next day trains were running into Paris. A serious strike also occurred on the state railways of Hungary in 1904; and there also the government suppressed it by ordering the military reservists among the employés to their colors.

¹² The increase in expenses on the Western Railway is attributed by French writers mainly to politics. M. Leroy-Beaulieu says, "It is next the political influence which enters into the choice and advancement of the personnel. It is, lastly, the lack of discipline which also results from the political influence at work. From the electoral point of view, the lower staff, being much more numerous, will always have much more power than the superior staff. It is always on the side of the former that many deputies will be systematically ranged." "State Railways in France."

"The working of state railroads is more costly for France than had even been foreseen by its adversaries," says M. Guyot. "It has proved the powerlessness of Parliament to control such undertakings. It has set up a class of workmen who consider that the line is run for their benefit and not for the convenience of shippers or travelers. It has dealt a hard blow to public credit in France."

The Italian government resumed the operation of the railways in that country in 1905. The number of employés had increased by 1908 from 97,000 to 137,000. The average annual wage per employé under private management in 1900 was \$250; in 1907, under government management, it was \$287.¹³ The demoralized service indicated that the inefficiency of the employés increased in direct ratio to their numbers and political power. An illustration of the fact that under government ownership railway employés may dictate to the management instead of the management to the employés was afforded by an incident that occurred in Italy soon after government operation was resumed. Discipline at Rome was bad. The Minister of Public Works decided to transfer there the district manager at Milan, and give him authority over the whole state system. This officer had the reputation of a severe disciplinarian. He had disposed of his house in Milan and come to Rome when the railway employés heard of the change. They at once sent a deputation to the Minister with notice that they would all strike if the appointment were persisted in. The Minister yielded; and the officer was left to return to Milan and find himself another house.¹⁴

It has been complained that after the Austrian government took over the Northern it "enlisted an army of new employés" and went "much too far in the reduction of hours of labor."¹⁵ To this has been largely attributed the fact that after government ownership the profits of the road were changed into a deficit. Under private manage-

¹³ "The Railway Situation in Italy," by Professor Filippo Tajani, *Quarterly Journal of Economics*, Aug., 1909.

¹⁴ "State Railways: Object Lessons from Other Lands," by Edwin A. Pratt, p. 26.

¹⁵ In a speech by M. Pattai, President of the Austrian Chamber of Deputies.

men; it paid dividends of 12½ per cent. Politics largely determines the personnel and compensation of employés on all the Austrian government lines.¹⁶

There has always been complaint of the application of both labor union and political pressure to the management of the Australian railways in behalf of the employés. In 1903 the enginemen's and firemen's unions on the Victorian railways objected to certain retrenchments that had been made. They were also incensed by a notice from Premier Irvine that they must withdraw from affiliation with the central labor organization, the Trades-Hall. The Prime Minister feared such affiliation would embroil them in labor quarrels with which they had no concern. The answer to him was that unless his notice was withdrawn within fifteen hours all the enginemen and firemen would strike; and this they did. The public sided with the government, however, and the strike collapsed.

It was chiefly to put a stop to the use of political influence on behalf of employés that laws were passed in Australia creating commissioners of railways with large

¹⁶ "In Austria particularly, political influence is extremely strong owing to the various nationalities concerned, and it may be assumed that the party in power will exercise great influence for its own people and province. Especially is this influence used to further the demands of the staff, and with these demands the Minister very often finds it politic to comply. As illustrating the difficulties arising from the existence of so many nationalities it may be mentioned that any new rule or regulation requires to be published in seven different languages."—Report to the British Board of Trade on Railways in Austria and Hungary, p. 29.

The private railways of Austria and Hungary pay very much higher salaries to their officers than do the state railways. The state railways pay somewhat higher wages than the private railways, but "day by day the disparity becomes less and less marked. The private railways recognize that the position of party politics necessitates that the pay of their men should approximate to the pay of the staff on the state lines."—Board of Trade Report, p. 84.

independent authority. But there is still more or less of such influence. Reference has been made elsewhere to the complaints of Mr. Short, the Commissioner of Railways for Western Australia, that the year 1912 was one of continual pressure from the staff for increased emoluments and remuneration and of the constant use of political influence by members of Parliament in their behalf.

The party out of power in Canada always accuses the one in power of hiring too many men on the government-owned Intercolonial, and of selecting them and manipulating their number to influence elections. That politics counts a great deal in determining the number and personnel of the employés seems clear. Statistics showing the relation between railway wages, traffic and earnings in Canada are significant. The Intercolonial's density of passenger traffic is 11 per cent. greater than the average in Canada; its density of freight traffic is 21 per cent. greater than the average; yet the wages per mile paid by it to road enginemen and trainmen and to yard enginemen and trainmen are 29 per cent. more than the average. These wages on all the roads in Canada in 1911 averaged \$801 a mile; on the Intercolonial, \$1,041. Instead of the difference in the cost of labor being greater in proportion than the difference in the traffic, it should ordinarily be less. The traffic handled per dollar of wages should increase as the traffic increases.

Official salaries on the Swiss railways were reduced after the adoption of government ownership, and some of the ablest officers left the service. On the other hand, in accordance with promises made by the government in the campaign for public purchase, substantial advances were made in the rates of wages. However, there seems to have been little or no unreasonable addition to the number of employés; and political influence seems to have played a smaller part in the management of the Swiss government

railways than in that of any other state railways in a democratic country.¹⁷

There have long been complaints of the excessive number of employés on the Belgian State railways. It has been said that when lines have been acquired from companies there has always been an increase. For example, it was asserted in Parliament that when the line from Liege to Maastricht was taken over, there was no appreciable improvement in the service, but a notable augmentation of employés. This, it was added, was "because, instead of fixing the staff necessary for the actual working of a certain station, the staff was determined by the number of persons generally required at stations of the same importance. It is an administrative rule, and one follows — the administrative rule! A stationmaster must not have a staff smaller than that of a neighboring station of the same class."¹⁸ Professor Mahaim, a defender of state management in Belgium, says that in 1907 the State railways had 64,224 office clerks and workmen, or 15,637 more than the Northern Railway of France, a privately-managed line having about the same mileage. This was 9.2 employés per mile for the Belgian lines and 8 for the Northern Railway. Prof. Mahaim attributes the discrepancy largely to differences in the conditions of operation, but adds, "However, it is certainly a feature of our State management to employ many officials."¹⁹

¹⁷ "The First Decade of the Swiss Federal Railways," by A. N. Holcombe, *Quarterly Journal of Economics*, Feb., 1912.

¹⁸ From remarks by M. Hubert, a Deputy, in a debate on the budget in 1901; quoted in "State Railways: Object Lessons from Other Lands," by E. A. Pratt, p. 63.

¹⁹ "The Belgian Experience of State Railways," by Professor E. Mahaim (Liege), a paper read at a Congress of the Royal Economic Society, London, Jan. 11, 1912.

Collateral evidence regarding the effect of the political influence of labor on operating expenses under government ownership is af-

There does not appear to be any case where government ownership has reduced the cost of labor. It is not meant to imply here that under government ownership there ought not to be increases in the numbers of railway employés and an amelioration of their conditions of work leading to increases in the cost of labor. That is another question. At this point all that is being discussed is how government ownership tends to affect the cost of railway operation. The experience of other countries indicates that under government ownership the cost of labor on the railways of the United States would be heavily increased. The conditions existing and a great deal of experience along other lines in this country indicate the same thing. The strength of the management to resist the pressure of labor would be reduced. The power of labor to enforce its demands would be increased, for it could press its demands, not only as it does now, by negotiations and strikes, but also by its votes. Already the votes of organized labor have gained it much in this country. Already a federal law limits to eight hours the working day of men employed by those executing government contracts. Already the employees of the various government departments work a maximum of eight hours. Already the railway labor organizations have got from the nation and the states much

furnished by the experience of the English government with its telegraph lines. Professor Hugo R. Meyer in his book, "The British State Telegraphs," has given voluminous data regarding the political pressure the employees have used with success to reduce the amount of work each does and increase their number, to enforce the rule of seniority in promotions and to get higher wages. He has presented similar data regarding the results of public ownership in his book, "Municipal Ownership in Great Britain," and he is largely corroborated by Major Leonard Darwin in his book entitled "Municipal Trading," and by President A. Lawrence Lowell of Harvard University in the chapter on "Municipal Trade" in his work on "The Government of England."

legislation whose effect is to limit the number of hours that railway employes may be kept at work and to increase the number that must be employed. There is no reason to believe that labor would demand less of the government than of its present employers. There is, consequently, the strongest ground for believing that it would get a great deal more, at least for a while, from the government than it does from private companies. In countries such as Germany and Japan state ownership is apt to improve the discipline of employes. In a country such as the United States, it is almost sure to relax discipline. In the long run, relaxation of discipline, and the various concessions made to employes, probably would tend to reduce the amount of work required of each employe, and, thereby, to increase the number employed, as much as to increase the rate of wages. Operating expenses may be increased in either way or in both ways.

An increase of 10 per cent. in the wages of employes without any increase in their average efficiency would cause an increase in the cost of labor that would wipe out all that government ownership probably could save in the cost of capital. Such an increase in the cost of labor could easily be made. A reduction of the normal working day from ten to nine hours without any increase in the average efficiency of labor would increase operating expenses almost \$117,000,000. An increase of only 5 per cent. in the scale of wages would add \$58,000,000 more, making a total increase in the cost of labor of \$175,000,000. This is almost 50 per cent. more than the maximum saving that it has been estimated could be made in the cost of capital. It is not hard to imagine that by increases in wages and in the number of employes the cost of labor might be increased 20 per cent. This would amount to \$234,000,000, or to almost 100 per cent. more than the estimated saving in the cost of capital. As we have seen,

on the Western Railway of France, the increase in three years in the cost of labor was 68 per cent.

It has been estimated that if the British government should acquire the railways of the United Kingdom it would save from \$20,000,000 to \$30,000,000 per year in return on capital. Many of the railway employes favor nationalization because they believe it would better their condition. It has been pointed out, however, that compliance with all the demands made by the British railway labor organizations in 1911 for improvements in their conditions of work and increases in their wages would cost about \$95,000,000 a year, which would be more than three times the greatest amount which it has been estimated could be saved in the cost of capital. In the United Kingdom, as in the United States, railway labor might be able by political influence to get many things under State railway management that it cannot get from private railways.

If the reasoning in this and preceding chapters is correct, the adoption of government ownership of railways in the United States would substantially reduce the total return that would have to be paid on the capital invested in the existing railways. The consolidation that it would involve, would also make practicable some large economies. But government ownership would tend to lead to wasteful extensions and improvements, to interfere with the physical development of the railways along the lines that best promote economy and to cause heavy increases in the cost of labor. These things, it would seem, probably would cause increases in operating expenses that would amount to much more than all the savings that could be effected.

The foregoing discussion has dealt with conditions existing in the United States and with the experience of other countries so far as it has seemed applicable to our conditions. Our next step will be to compare the statistics

of some railways under public management and others under private management to ascertain whether they seem to tend to support the conclusions reached by the preceding reasoning.

CHAPTER IX

ECONOMY OF MANAGEMENT OF STATE AND PRIVATE RAILWAYS

COMPARISONS of statistics seldom afford satisfactory evidence as to the relative efficiency of the managements of different railways unless allowances be made for the differences between the conditions under which the railways are operated and between the ways in which the statistics are made up. It is never practicable to make more than approximate allowances for these differences. The most satisfactory comparisons are between the statistics of the same road in successive periods. The allowances that must then be made for differences between conditions over which the managements have no control are at the minimum. The second most satisfactory class of comparisons is between the statistics of different roads in the same country, especially if the country be small. In the same country the political, social, commercial and industrial conditions surrounding the operation of different railways are likely to be similar; and if the country be small, the physical environments are not likely to be very dissimilar. The third most satisfactory class of comparisons is between the statistics of railways in different countries where the conditions are somewhat similar. The least satisfactory class of all is between the statistics of railways in different countries where the physical, political, social, commercial and industrial conditions are widely dissimilar. Unfortunately, in discussions of government ownership it is this last, and least enlightened and enlighten-

ing, class of comparisons that is most frequently made.

In this chapter there will be made comparisons of all of these kinds between the statistics of some government-managed and some privately-managed railways as a part of the discussion of whether a government system of railways in this country probably would be more economically operated than private railways. It is not expected, however, that the reader will accept these comparisons as conclusive on the question whether state railways or private railways are the more economically managed. On the contrary, they are introduced merely to give opportunity for drawing an inference as to whether the statistics of leading state and private railways apparently tend to corroborate or to rebut evidence bearing on the question of economy of management that already has been given. It was said that Gladstone could make a budget speech as interesting as fiction. Few have this gift in the use of statistics, and, therefore, an attempt will be made here to give only data relating to typical railway systems, and to exclude as far as may be practicable that which is of a highly technical character.

More changes from private to public management of railways have occurred than changes of the opposite kind. But there have been a good many transfers from public to private management; and reference already has been made to some of these which have taken place in the United States.¹ The state of Pennsylvania for over twenty years operated the Philadelphia & Columbia Railroad, running it at a loss. In 1855 it was sold to the Pennsylvania Railroad Company, since when it has been operated as a part of the Pennsylvania system. The state of North Carolina owns and formerly operated the North Carolina Railroad. It is now leased to the Southern Railway. Judge

¹ See pp. 43 and 122.

Womack says that "While the lessees have not by any means done what they might have done, the development of the state along the lines of the road is one of the features of the South's progress. It needs no saying that the road under private management has been a great financial success and the state's income from its shares is safe and certain."² The state of North Carolina also owns the Atlantic & North Carolina (now leased to the Norfolk Southern Railroad) and operated it for fifty years, until 1906. Judge Womack has graphically described what he calls the "political mismanagement" during this period. "The effects of the lease (to the Norfolk Southern) were immediate. The first year of private management improved the roadbed and equipment to a point never before approached. The road is being extended and new connections made, and is run on business, as opposed to political, methods. The service, both passenger and freight, has been nearly doubled. Favoritism has been abolished. The stock has advanced to from sixty to seventy cents, and would be higher but for the fact that certain politicians, many of whom participated in making the lease, have instituted litigation in an endeavor to annul it."³ Judge Womack adds that "the increase in value of the state's stock in these two roads under private management, if now sold at ruling prices, would pay off the entire state debt." The state of Georgia formerly operated the Western & Atlantic at an annual loss. Since its lease to the Nashville, Chattanooga & St. Louis, the road has been profitable, and the company pays to the state a substantial rental.

Reference already has been made to the heavy increases

² "State Ownership in North Carolina," by T. B. Womack, formerly Judge of the Supreme Court of North Carolina. *World's Work*, Dec., 1906.

³ *World's Work*, Dec., 1906.

in operating expenses that occurred on the Western Railway of France after its management was taken over by the government in 1908. Its gross receipts in 1908 were \$43,529,000, and in 1912 they were \$48,867,000, an increase of 12 per cent. Its operating expenses in 1908 were \$29,592,000, and in 1912 they were \$44,053,000, an increase of almost 50 per cent. With almost no changes in its average freight and passenger rates, the ratio of its operating expenses to its total earnings increased from 68 per cent. to 90 per cent. There was not an improvement meantime, but a deterioration, in the service rendered. No such increases in operating expenses took place on the five large privately-managed railways of France. The main cause of the advance in expenses on the Western was increases in the number and wages of employes. But these do not account for it all. The increase in the cost of labor was \$10,818,400 a year, while the total increase in expenses was \$14,461,000 a year. A large part of the increase in operating expenses was due to the deterioration of the service, and to consequent increases in the amounts that had to be paid in indemnities because of accidents to persons and loss, delay or damage to goods. The indemnities paid by the private company that formerly operated the Western amounted to \$400,000 to \$600,000 a year. Under government management they amounted in 1912 to \$2,120,000.⁴ Further increases in expenses have been due to the same inefficiency and demoralization that caused this augmentation of the indemnities, and which resulted in wasteful purchase, distribution and handling of materials and equipment. For example, six months after government management was begun, forty Pacific engines were ordered, which when

⁴ "State Railways in France," by Pierre Leroy-Beaulieu, in "Relations of Railways to the State," p. 60.

delivered were found entirely unadapted to use on the Western. It has been claimed by the defenders of state management in France that much of the increase in expenses has been due to the fact that the old Western company let the road run down; but M. Colson, the leading authority on the subject, has shown that while part of the increase has been due to this cause much the greater part of it has been due to the causes that have been mentioned.⁵

The percentages of the total earnings that are required to pay operating expenses are often used as tests of whether a railway is being operated with increasing or decreasing economy, and of which of two railways or systems of railways is operated with the greater economy. The "operating ratio"—as this percentage is called—is not a satisfactory measure of economy, unless the various conditions that affect it be considered. The total earnings of a railway result from the charging of given rates for the handling of a given traffic; and, other things being equal, the total earnings will increase or decrease as the rates are raised or reduced. The total expenses depend, other things being equal, on the business that is handled. It will be seen, then, that the operating ratios of the same road at different periods, and of different railways, depend (1) on the rates charged; (2) on the traffic to which they are applied; and (3) on the expenses incurred. Therefore, if a railway's rates remain practically unchanged and its operating ratio increases, it is a sign of a decline in the economy of its operation; and if these changes are unaccompanied by any material change in the traffic handled the evidence of a decline in the economy of operation is very strong. Likewise, if, without any change in the

⁵ "Results of Operation of the French State Railways, 1909 to 1911," by C. Colson, in *Bulletin of the International Railway Congress*, reprinted in *Railway Age Gazette*, May 31, 1912, pp. 1205-1208.

passenger and freight rates, the operating ratio declines, it is a sign of an increase in the economy of operation; and if there is meantime little or no change in the traffic handled the evidence of an increase in the economy of operation is persuasive. The same general principles apply in comparing the operating ratios of different railways.

We have seen how the operating ratio of the Western Railway of France has increased under government management. The average operating ratio of the Italian railways under private management during the five years 1899-1905 was 67½ per cent.⁶ Government operation was resumed in 1905; and in 1907-08, without material contributing changes in rates, the operating ratio had risen to 82.6 per cent. Subsequently there were large increases in the traffic and earnings; and in 1909-10 the operating ratio was only 77.3 per cent., but in 1910-11 it advanced again to 80.3 per cent. This was still much higher than it was under private management.

The government of Switzerland, after it purchased the railways, made increases in the wages of employés and reductions in the passenger and freight rates. On the other hand, the unification and consolidation under one management caused some economies; but there was an increase in the operating ratio under government management. In 1904 it was 66 per cent.; in 1905, 65 per cent.; in 1907, 67 per cent.; and in 1909, 68 per cent. In 1910, however, it was down to 63 per cent.

In 1906-7 the government of Japan acquired most of the privately-owned mileage in the country, thereby about trebling the mileage which it had previously owned. During the first year after the nationalization of this large

⁶ Board of Trade Report on Railways in Belgium, France and Italy, p. 233.

mileage there were loud complaints regarding the way the railways were managed. Since then, apparently, the results have been more satisfactory, and it is said that large economies have been effected. One writer states that over \$2,000,000 is being saved yearly by improved operating methods. "An enormous increase in car mileage has been made. In 1907 the average mileage of passenger cars per day was 131; the average mileage of freight cars, 51," the latter figure being about twice the corresponding figure for the railways of the United States. Doubtless these results are attributable to "the splendid discipline of the 90,000 Japanese employés. The service they render has been highly praised, and this fact would justify a prediction that efficiency will continue to increase."⁷

The government of the United States a few years ago acquired the Panama Railroad and its steamship line from a private company. In 1904, under private management, the operating ratio of the railway was 61.9 per cent. In ten years it had not been over 66 per cent. Under public management it advanced, being, for example, as follows in the years mentioned: 1905, 77.5 per cent.; 1906, 79.5 per cent.; 1908, 74.5 per cent.; 1910, 71.4 per cent.; 1911, 70.8 per cent.⁸ The increase in earnings between 1904 and 1911 was 84 per cent., and in expenses, 110 per cent. The case of the Panama Railroad might be considered a peculiar one, owing to the fact that the railway was being operated largely as a facility for the

⁷ "The Railways of Japan," by J. E. Slater, in *Railroad Men* for May, 1913. As illustrating the extraordinary discipline and loyalty of the Japanese railway employés it is narrated that a certain station master felt called on to commit suicide when a train carrying the late Emperor was delayed five minutes because of a mistake of a signalman at the devoted station master's station!

⁸ See Poor's Manual for 1911.

construction of the Panama canal, were it not that the changes in the results of its operation after its transfer from private to public management were similar to changes that have occurred on other railways after like transfers. The private company that formerly owned the road, which was then a double-track line, had a capitalization of \$221,120 per mile. The reconstruction of the railway as a single-track line by the United States government cost \$226,190 per mile. This includes nothing for land for right-of-way and terminals, which the government already owned; and the reconstruction was carried on under the direction of army engineers who were not subject to political or other outside influences.

One of the interesting examples of the transfer of a large public utility from private to public ownership and management is afforded by the telegraph lines in England. The British government acquired the telegraphs in 1870, and has operated them since in connection with the Post Office department. When the bill for their acquisition was introduced in Parliament the Chancellor of the Exchequer estimated their cost at between \$15,000,000 and \$20,000,000, and the net revenue they would yield at \$1,050,000 a year. In these estimates the Chancellor through some mistake, failed to take account of the reversionary rights of the railway companies in the land used by the telegraph companies under lease. He also underestimated the amounts that would have to be paid to the telegraph companies. When the purchases were consummated the payments to the telegraph companies exceeded \$29,000,000, and the payments to the railways were over \$10,000,000, a total of almost \$40,000,000.

The spokesmen of the government estimated that it would require \$1,000,000 to \$1,500,000 to make needed extensions of the lines. By September, 1873, the government had spent on rearrangements and extensions over

\$11,000,000. Of this \$8,500,000 represented the cost of extensions. This was almost six times what the government had estimated the extensions needed would cost.

The advocates of state purchase believed that by reducing the rates charged a largely increased business could be built up, which could be handled at a reduced unit cost. They predicted that the operating expenses would be 51 to 56 per cent. of the total revenues. The reductions in rates proposed were made, and the expected increases in business occurred; but the operating expenses exceeded expectations. The ratio of operating expenses to gross earnings, which was 57 per cent. in 1870-71, increased to 79 per cent. the next year, and has since varied from 79 to 108 per cent. The capital invested in the telegraphs to March 30, 1906, was \$84,112,000; and up to that date the sums paid by the government in unearned interest on the investment had aggregated \$22,500,000. This heavy increase in the ratio of operating expenses to earnings, and the resulting deficit, which has had to be paid by the British taxpayer, have been largely, but by no means entirely, due to the reductions in rates. They have been greatly due to increases in operating expenses; and these have been due mainly to increases in the number and compensation of employés. The number of messages sent advanced from 27,000,000 in 1880, to almost 90,000,000 in 1905-06; and meantime the cost of wages and salaries per message increased from 11.7 cents to 14.29 cents.⁹

France affords opportunity not only for comparing the results of the operation of a large railway under both private and public management, but also for comparing the results gained contemporaneously on different railways under private and public management. The French government has operated the old State system for thirty years.

⁹ Hugo R. Meyer: "The British State Telegraphs."

This and the recently-acquired Western had together in 1910 5,517 miles of line. The five great private companies had in the same year 18,730 miles. These companies are the Northern, the Eastern, the Paris & Orleans, the Paris-Lyons-Mediterranean and the Southern. There are given in Table I some comparative statistics for the two government and five large private railways in 1910.

The average passenger journey and the average haul per ton on the government roads were shorter than on the private roads, which, as the terminal expenses are the same regardless of the length of the haul, would tend to make the expenses of the government roads higher in proportion to the volume of their traffic than those of the private railways. But the volume of traffic handled by the private railways was much larger than that of the government lines, their passenger traffic being 12 per cent. heavier, and their freight traffic 178 per cent. heavier; yet the operating expenses per mile of the state railways were only 5 per cent. less than those of the private railways. Although the average passenger and freight rates on the two classes of roads were practically the same, the average earnings per train mile of the government lines were only \$1.23, while those of the private lines were \$1.62, which shows that the private lines secured heavier loading of trains. It took almost 80 per cent. of the total earnings of the government lines to pay their operating expenses, while the private lines operated for 55.5 per cent.

There are three government railways in Canada. Two are very small. The third, the Intercolonial, is a line of 1,450 miles in the Eastern province. In Table II some comparative statistics are given for the Intercolonial and all of the railways of Canada.

These figures show that the Intercolonial's passenger traffic is 10.5 per cent. heavier and its freight traffic 21.4 per cent. heavier than those of the railways of Canada

TABLE I
Comparative Statistics for the French State and the Large Private Railways, 1910

	State Railways	Private Railways	Percentage Private to State Railways
Mileage operated	5,517	18,730	
Passenger density (passengers carried one mile per mile of line)	388,894	436,000	112%
Average journey, miles....	17	22	
Average rate per passenger mile, cents	1.03 to 1.07	1.11 to 1.25	
Freight density (tons hauled one mile per mile of line)	293,918	819,055	278.6%
Average haul, miles	71	96	
Average rate per ton mile, cents	1.55 to 1.60	1.18 to 1.46	
Train miles per mile of line.	8,650	9,688	112%
Earnings per train mile..	\$1.23	\$1.62	
Total earnings per mile of line	\$10,612	\$16,009	150.89%
Total expenses per mile of line	\$8,459	\$8,889	105%
Percentage operating expenses to total earnings.	79.7	55.5	
Net earnings per mile of line	\$2,953	\$7,120	241.4%

TABLE II

Comparative Statistics of Intercolonial Railway of Canada and
all Canadian Railways, 1911

	Intercolonial	All Canadian Railways	Percentage all Railways to Intercolonial
Mileage operated	1,450	25,400	
Average capitalization (or cost of construction) per mile..	\$64,095	\$55,829	87.1%
Passenger density (passengers carried one mile per mile of line)	114,567	102,597	89%
Average journey, miles	50.5	70	
Average passengers per train	54	60	
Average rate per passenger mile, cents	1.66	1.94	
Average passenger train miles per mile of line	2,100	1,703	81%
Freight density (tons hauled one mile per mile of line)..	767,036	631,829	82.3%
Average haul per ton, miles..	261	200	
Average tons per train	251	305	
Average freight train miles per mile of line	3,052	2,314	75.8%
Average rate per ton mile, cents .....	.582	.777	
Average total earnings per mile	\$6,911	\$7,430	107.5%
Average operating expenses per mile	\$6,717	\$5,199	76.7%
Percentage operating expenses to total earnings	97.2	69.4	
Average net earnings per mile	\$194	\$2,272	1,171.13%

as a whole. The average passenger journey on it is 50.5 miles and on all the Canadian railways, 70 miles; but the Intercolonial gets an average haul per ton of 261 miles, while the average haul of all the Canadian roads is but 200 miles. On the whole, it would seem that the Intercolonial's operating expenses should not be much higher per mile than the average in Canada, but they are 30 per cent. higher. As has been shown in an earlier chapter, one reason why the Intercolonial's expenses are greater in proportion than those of all the Canadian lines is that it pays out more in proportion for labor. Another thing that makes its operating expenses relatively high is that although it has a denser passenger and freight traffic than the average it handles only 54 passengers per train, as compared with 60 for all the railways of Canada, and only 251 tons per train, as compared with 305 for all the Canadian roads. Owing to these and other causes, its cost of conducting transportation is 54 per cent. of its total operating expenses, while for the Canadian railways as a whole the cost of conducting transportation is only 50.6 per cent. of total operating expenses. In other words, the Intercolonial spends more of its earnings in proportion for moving its trains, and less in proportion for maintaining and improving its physical property. Its extremely high operating ratio — 97.2 per cent. in 1911 — is partly due to its low freight and passenger rates, partly to its relatively uneconomical management.

The privately-owned railways with which the government railways of Italy may be most fairly compared are those of Spain. Both Spain and Italy are Latin countries. Both are monarchies, although the government of Italy is much more democratic than the government of Spain. The temperaments of the people, and the social, commercial and industrial conditions are somewhat alike. Both countries have rugged topographies, which present

similar operating difficulties. In Table III are given some comparative figures for the railways of the two countries.

TABLE III¹⁰

Comparative Statistics for Italian State and Spanish Private Railways. Italy, 1907-1908; Spain, 1905

	Italian State Railways	Spanish Private Railways	Percentage Private to State Railways
Mileage operated	8,229	8,737	
Capitalization (or cost of construction) per mile	\$124,586	\$77,077	61.8%
Passengers per mile	9,376	4,877	52%
Tons per mile	4,108	2,687.6	53%
Total earnings per mile of line	\$10,555	\$6,901	65.4%
Total operating expenses per mile	\$9,339	\$3,479	37.3%
Percentage operating expenses to total earnings	88.47	50.4	
Net earnings per mile	\$1,950	\$3,422	175%

The average passenger journeys and freight hauls are believed to be about the same. The number of passengers hauled for each mile of line on the Spanish roads was 52 per cent. as great as on the Italian lines, and their average number of tons per mile was 53 per cent. as great, while their operating expenses per mile were only 37 per cent. as great. The ratio of the operating expenses of the Ital-

¹⁰ The Italian figures for as early a year as 1907-1908 have been used in order to get a reasonable basis for comparison with the Spanish roads, the latest available statistics for which are for 1905.

ian roads to their total earnings was 88 per cent., as compared with 50 per cent. for the Spanish roads.

It will be noted that the capitalization per mile of the Italian roads is large, being almost \$125,000 per mile. This large capitalization has been accumulated chiefly under government management. The Italian railways were originally constructed by the various Italian states, and, after the country was united, chiefly by the government of the Kingdom of Italy. Professor Hugh R. Meyer has reviewed the history of railway construction in Italy over a long period.¹¹ He concludes that the heavy capitalization and operating expenses are due mainly to the operation of political influences which caused the territories where many lines should be built to be determined by sectional rather than national considerations. In 1877 the total mileage was 5,125 miles. The Minister of Public Works, Signor Depretis, introduced a bill for constructing 27 new lines 1,235 miles in length which he estimated would cost \$127,000,000, or \$103,000 a mile. A short time later the government to which he belonged was displaced by one in which Signor Baccarini was Minister of Public Works. The new minister brought in a bill for building 38 lines aggregating 2,255 miles, which he estimated would cost \$74,700 a mile. The government subsequently raised the number of projected lines to 64, aggregating 3,762 miles, which it estimated would cost \$64,300 a mile. The measure providing for their construction was passed without previous careful investigations. It is said that in some cases there were submitted to Parliament estimates prepared by engineers who had not set foot in the country to be traversed. The public belief that the cost of the railways would be relatively

¹¹ "The Disastrous Results in Italy of State Railway Building," by Hugo R. Meyer, *Journal of Political Economy*, June, 1906.

small was encouraged by letting contracts for amounts which did not include all necessary expenditures. For example, contracts were let for 927 miles of lines at \$50,300 a mile. By June, 1883, the outlay on these lines amounted to \$115,200 a mile.

"By the act of April 27, 1885," says Professor Meyer, "the government leased all of the state railways to companies on terms that proved exceedingly burdensome to the taxpayers of Italy, though not unduly favorable to the companies, the fact being that some of the lines authorized in 1879 are not yet earning operating expenses, to say nothing of the interest on the capital invested. On July 20, 1888, Parliament passed an act under which the lessees of the state railways agreed to aid in completing the building of the lines authorized in 1879. The act assumed that the cost of the lines of 1879 would average \$128,300 a mile. Signor Depretis' estimate, it will be remembered, in 1877 had been \$103,000 a mile.

"In the twelve years 1890 to 1901 the railways of Italy earned on an average \$14,345,000 a year above operating expenses. That sum was equivalent to an average return of 1.456 per cent. on the average annual sum invested in the railways, namely \$985,400,000. Sixty-seven per cent. of the capital that was invested in the railways in the period from 1890 to 1901 had been contributed by the state, and had been raised by the sale of bonds which pay, nominally, 4 per cent. in interest, but had been sold at such discounts as to pay interest at the rate of not less than 4.5 per cent. The remaining 33 per cent., or \$324,200,000, had been contributed by the lessee companies. But under the terms on which the companies had leased the railways owned by the state, and had aided in completing the building of the lines authorized in 1879, the state had been obliged in the period from 1890 to 1901, to turn over to the lessee companies not only the whole of

the net earnings of the whole of the railways — an average annual sum of \$14,345,000 — but also an additional average annual sum of \$1,488,400. Throughout the period 1890 to 1901, therefore, the state not only received no interest on its average investment of \$661,200,000, but in addition was obliged to pay the lessee companies \$1,488,400 a year. Since the state's average investment of \$661,200,000 called for \$29,754,000 a year in interest, to be paid to the holders of the state's bonds, the total loss to the state each year averaged \$29,754,000, plus \$1,488,400, or \$31,242,400. That loss constituted an annual burden on the taxpayers of Italy. And the prospect is that that burden will increase rather than diminish, under the recent resumption of operation of the railways by the state."

The unhappy prospect held out in the last sentence has been realized.

The five large private railways in France do not afford the best examples of results gained under private ownership and management. From their earliest history they have been strictly regulated and closely supervised by the public authorities; and their interest and dividends have been guaranteed, which probably has tended to reduce the incentive to economical operation. Nevertheless, the five large private railways of France are the privately-managed lines which can be most suitably compared with the government railways of Central and Northern Europe. In Table IV are given comparative statistics for the government railways of Belgium, Switzerland and Prussia-Hesse, and the private railways of France, for 1910.

The Belgian lines carry passengers an average of 15.4 miles; the French private roads, 22 miles; and each reduction in the length of the average journey tends to increase operating expenses. The density of passenger traffic on the French private railways is only 44 per cent,

TABLE IV
Comparative Statistics for the Prussian-Hessian, Belgian, and Swiss State Railways and the Large French Private Railways, 1910

	Prussian-Hessian Railways	Swiss State Railways	Belgian Railways	Large French Private Railways	Percentage French to Prussian-Hessian Roads	Percentage French to Swiss Roads	Percentage French to Belgian Roads
Mileage operated	23,335	2,924	2,685	18,730			
Construction (or cost of construction) per mile	\$14,000	\$16,692	\$18,787	\$148,886	130.6%	127.5%	79.3%
Passenger density (passengers per mile)	693,921	449,860	995,671	436,000	62.8%	89.0%	43.8%
Average journey, miles	14.45	13	15.4	22			
Average rate per passenger, cents .....	.88	1.29	.779	1.11 to 1.25			
Freight density (tons hauled per mile)	1,150,460	256,237	1,084,288	810,055	71.1%	310.2%	75.3%
Average haul, miles	68	408	49.7	96			
Average rate per ton mile, cents	1.248	3.01	1.309	1.18 to 1.46			
Revenue train miles per mile of line	13,695			9,688	77.1%		
Revenue freight miles per mile of line	\$11,652			\$1,662	72.2%		
Total earnings per mile of line	\$22,144	\$14,682	\$22,332	\$16,009	109.0%		72.0%
Operating expense per mile of line	\$14,866	\$9,312	\$14,570	\$8,889	98.4%		61.0%
Profit per mile	\$7,278	\$5,370	\$7,762	\$7,120	132.5%		92.9%
Net earnings per mile	\$7,278	\$5,370	\$7,762	\$7,120			

as great as on the Belgian state railways, which may offset the advantage that their longer journey gives the French lines. The average haul per ton on the Belgian roads is 50 miles; on the French roads, 96 miles. In other words, in handling a given ton mileage, the Belgian lines have to render almost twice as much terminal service as the French lines. As an offset to this advantage of the French roads they have the disadvantage of having a density of freight traffic only 75 per cent. as great as that of the Belgian roads; and the wages paid by the Belgian roads seem, on the whole, to be lower than those of any other railways in Northern Europe.

With longer hauls, higher wages, a passenger density less than half as great as that of the Belgian lines and a freight density three-fourths as great, the French roads have operating expenses per mile 61 per cent. as great as those of the Belgian lines. The ratio of the operating expenses of the French roads to their total earnings is 55.5 per cent. and of the Belgian roads 65.5 per cent., but this difference is largely or wholly explained by the very low average passenger rate of the Belgian roads and their larger ratio of passenger to freight traffic; for it costs much more to haul a given number of passengers one mile than a given number of tons one mile. The Belgian lines have a larger capitalization per mile than the French roads, but the difference between the capitalizations is no greater in proportion than the differences between the densities of traffic. It is hard or impossible to make any satisfactory inference from the available statistical data as to whether the Belgian state or the French private railways are the more economically managed.

The Prussian-Hessian lines are usually considered the best managed state railways in the world. The average passenger journey on them is 14 miles, and on the French private lines, it is 22 miles; but the density of passenger

traffic on the French private lines is only 63 per cent. as great as it is on the Prussian-Hessian roads. The average haul per ton on the Prussian-Hessian roads is 68 miles; on the French private roads, 96 miles; but the freight density of the French private roads is only 71 per cent. as great as that of the Prussian-Hessian lines. The wages paid by the French roads seem to be somewhat higher than those paid by the Prussian-Hessian lines. It is impossible to make a satisfactory comparison because neither the average wages per day nor the average wages per year on the French railways are available; and in both countries allowances of various kinds are made to employés in addition to their wages, which complicates comparisons. Perhaps the differences between the wages paid to enginemen and firemen are not far from typical. The annual wages of enginemen on the Prussian-Hessian railways, including their various allowances, ranged in 1908 from a minimum of \$333 to a maximum of \$523.60. The wages of enginemen on the Southern Railway of France, including allowances, averaged in the same year about \$667, and on the Eastern Railway, \$778. The wages of locomotive firemen on the Prussian-Hessian railways were from \$238 to \$357. On the Southern Railway of France, they averaged about \$391, and on the Eastern about \$527.¹² The Prussian-Hessian lines have the advantage, or disadvantage, as the case may be, of operating their entire mileage as a single system, while the French roads are operated as five distinct systems. With longer hauls, but higher wages, and a density of traffic about two-thirds that of the Prussian-Hessian lines, the French roads have operating expenses per mile only 60 per cent. as great as the Prussian-Hessian lines. The operating ratio of the Prussian

¹² These figures are based on statistics given in *Bulletin 34*, Bureau of Railway Economics, Washington, D. C.

lines is 67 per cent.; that of the French roads only 55.5 per cent. The capitalization per mile of the French roads is 31 per cent. greater than that of the Prussian-Hessian lines. Doubtless this is partly explained by physical conditions, Prussia being a more level country and one, therefore, in which the cost of railway construction is less. While the Prussian roads are very well managed, the evidence clearly does not seem to indicate that they are more economically managed than the large French private lines.

It is, perhaps, hardly fair to compare the operation of the railways of Switzerland, where government ownership is the predominant policy, with that of any other railways. The topography of the country necessarily makes construction and operation very expensive. But government ownership in Switzerland has attracted much attention; and there have been inserted in Table IV some statistics comparing the Swiss railways with their neighbors, the private railways of France. The density of passenger traffic on the Swiss railways is somewhat greater than on the private railways of France, but the average journey is much shorter; the density of freight traffic of the private railways of France is over 200 per cent. greater than that of the Swiss railways, and their average haul is over twice as long; the operating expenses per mile of the French lines are $4\frac{1}{2}$ per cent. less than those of the Swiss railways; the operating ratio of the former is only 55.5 per cent., while that of the latter is 68 per cent., although the Swiss rates are the higher; while the capitalization per mile of the Swiss railways is only 79 per cent. as great as that of the French lines, in spite of the mountainous character of the country.

No government railways in the world have been the subject of more discussion or more absurd comparisons with the railways of other countries than the railroads of Australasia. And, indeed, it is hard to make any com-

parison between them and the railways of any other country that is satisfactory. Perhaps they can be most rationally compared with the railroads of Canada and Argentina. All of these are new, sparsely-settled and undeveloped countries. While Argentina is a Latin-American nation, its population has a generous sprinkling of Europeans who are active in its business affairs; and some of its leading railways are owned and managed by Europeans — chiefly Englishmen. Both Australia and Canada are Anglo-Saxon; and they are the two leading colonies of the British crown. It would be preferable to compare all of the railways of Australasia with those of Canada and Argentina. Unfortunately, the management of the railways of New South Wales is the only one in Australasia which compiles its statistics in such a way as to make comparisons at all satisfactory possible. Fortunately, on the other hand, the traffic of the New South Wales lines appears to be more similar than that of the other Australasian roads to the traffic of the Argentine and Canadian railways; and the New South Wales lines appear to be as well managed as any others in Australasia. Therefore, in Tables V and VI only the statistics of the New South Wales railways are compared with those of the railways of Canada and Argentina. In the case of New South Wales and Argentina it has been necessary to make the comparison as of 1909, because this is the last year for which satisfactory figures for Argentina are at hand.

The New South Wales lines have a volume of passenger traffic almost twice as great as that of the Argentine roads. On the other hand, the average journey on them is very short, being for both country and suburban passengers only about 15 miles. The freight traffic density of the Argentine roads is over 63 per cent. greater than that of the New South Wales roads, and they get almost twice as long a haul. The operating expenses per mile of the

TABLE V
Comparative Statistics for the New South Wales State Railways
and the Railways of Argentina, 1909

	New South Wales State Railways	Argentine Railways	Percentage Argentine to N. S. W. Railways
Mileage operated	3,623	15,363	
Capitalization (or cost of construction) per mile	\$63,999	\$51,185	80%
Passenger density (passengers carried one mile per mile of line)	159,473	80,431	50.4%
Average journey, miles.			
Suburban	6.6	24.2	
Country	75		
Average rate per passenger mile, cents	1.45	1.91	
Freight density (tons hauled one mile per mile of line)...	175,558	286,507	163.1%
Average haul, miles	68.4	120.9	
Average rate per ton mile, cents	2.00	1.59	
Total earnings per mile.....	\$6,759	\$6,521	96.4%
Operating expenses per mile..	\$3,969	\$3,873	97.6%
Percentage operating expenses to total earnings	58.7	59.4	
Net earnings per mile of line..	\$2,790	\$2,648	94.9%

Argentine roads are slightly less than those of the New South Wales roads, their operating ratio slightly greater, and their capitalization per mile considerably less. A given passenger mileage is much more expensive to handle than a given ton mileage, and in view of the high ratio

TABLE VI

Comparative Statistics of New South Wales State Railways and all the Railways of Canada, 1912.

	New South Wales State Railways	Canadian Railways	Percentage Canadian to N. S. W. Railways
Mileage operated	3,799	26,727	
Average capitalization (or cost of construction) per mile..	\$66,810	\$50,832 ¹³	76.0%
Passenger density (passengers carried one mile per mile of line)	287,203	108,888	37.9%
Average journey, miles			
Country	80.5	71	
Suburban	6.98		
Average passengers per train.	121	62	
Passenger train miles per mile of line	2,363	1,756	74.3%
Average rate per passenger mile, cents	1.04	1.94	
Freight density (tons hauled one mile per mile of line) ..	226,906	731,776	322.5%
Average haul, miles	81	218	
Average rate per ton mile, cents	1.78	.757	
Average tons per train	90	325	
Average freight train miles per mile of line	2,512	2,252	89.6%
Total earnings per mile	\$8,321	\$8,209	98.6%
Operating expenses per mile..	\$5,345	\$5,639	105.5%
Percentage operating expenses to total earnings	64.23	68.7	
Average net earnings per mile	\$2,976	\$2,570	86.3%

¹³ Private railways only, excluding duplications.

of passenger traffic to freight traffic on the New South Wales roads, the comparison is rather favorable than unfavorable to them.

Although New South Wales and Canada are both new and undeveloped countries, inhabited by Anglo-Saxons, a glance at Table VI will show that the traffic of their railways differs greatly in respect of the proportion of passenger to freight business and of the ways in which the traffic is handled.

The passenger density of the New South Wales roads is more than two and one-half times as great as that of the Canadian lines; and they carry an average of 121 passengers per train, while the railways of Canada carry only 62. On the other hand, the average passenger journey in New South Wales is extremely short, while in Canada it is very long. Fully 40 per cent. of the passenger traffic of the railways of New South Wales is suburban business, which is handled within a radius of 35 miles of Sydney and Newcastle. This it is which enables them to get so large an average passenger trainload. The Canadian roads have only 38 per cent. as much passenger traffic per mile as the New South Wales roads, but they run 74 per cent. as many train miles per mile to handle it.

While the density of passenger traffic in New South Wales is greater than in Canada, the reverse is the case as to freight. Not only is the freight business of the New South Wales lines light, but the average haul per ton is little more than one-third as long as in Canada. However, the New South Wales lines have a large amount of traffic which they could handle in large carloads and trainloads and with much economy. Sixty-three per cent. of their tonnage is coal, coke, shale, crude ores and other minerals. Nevertheless, while the Canadian roads haul an average of 325 tons per train, the New South Wales

roads haul an average of only 90 tons per train. In consequence, although the freight traffic per mile of the New South Wales roads is less than one-third as great as that of the Canadian roads, the Canadian roads run 10 per cent. less freight train miles per mile than the New South Wales lines. There is agitation in New South Wales for double-tracking to relieve congestion on the main lines. Congestion on main lines is produced by running an excessive number of trains in proportion to the trackage. By doubling their number of tons per train the New South Wales railways could reduce by 1,256 the number of freight train miles run per mile per year. This would relieve the congestion and postpone the time when they would need additional tracks. By increases in trainloads large economies in investment, fixed charges, and operating expenses can be made. In this way such economies have been effected by the railways of Prussia-Hesse and France, and, most notably, by those of Canada and the United States. In order to handle freight in large trainloads, however, it is necessary to have strong trucks, large cars and powerful engines. These the railways of New South Wales lack. The average capacity of their freight cars in 1912, for example, was only 11 tons, while in Canada the average was 30 tons.

Wages are the most important item in operating expenses; and the average wage paid to railway employes in New South Wales in 1912 was \$525, while in Canada it was \$606, or 15½ per cent. more. If the Canadian roads had paid no higher wages than the New South Wales roads their expenses would have been much less. Even as things were the Canadian roads handled 38 per cent. as much passenger traffic and 222 per cent. more freight traffic per mile than the New South Wales roads for only 5.5 per cent. more operating expenses per mile. It will be noted that the capitalization per mile of the Canadian

private lines, excluding duplications due to intercorporate ownership of securities, was only 76 per cent. as great as that of the New South Wales state lines.

The largest system of government-owned railways in the world is that of Prussia-Hesse. The largest privately-owned system in Europe is that of the United Kingdom. The mileages of line of the two systems are about the same. The statistics compiled by the British railways are very incomplete. Only one road, the North Eastern, gives figures regarding ton mileage, train loading, and so on. It is necessary, therefore, in comparing the British roads as a whole with those of other countries, either to make numerous estimates regarding the results of the former, which really are only more or less careful guesses, or to use statistics made up on different bases from those heretofore presented. In Table VII are given some of the available comparable statistics for the Prussian-Hessian lines and those of the United Kingdom.

It will be noted that the traffic figures given are for *tons* and *passengers* hauled, and not for *ton miles* and *passenger miles*. The total tons and passengers hauled for each mile of line on the British roads is 20 per cent. greater than on the Prussian-Hessian lines, and their operating expenses per mile are only 1.4 per cent. greater. Besides, the British roads render many services in connection with the handling of freight that the Prussian-Hessian roads do not. They collect and deliver a large part of it without extra charge, and are very liberal in their demurrage and warehousing regulations. Owing to the way in which the commercial, industrial and transportation methods of the country have developed, they handle freight in extremely small lots, which further increases their expenses. Of about four thousand shipments made from a London freight station in a single night, it was found by actual count that less than one-fourth exceeded 300 pounds

TABLE VII

Comparative Statistics for the Prussian-Hessian State Railways and the Private Railways of the United Kingdom, 1910

	Prussian-Hessian State Railways	British Private Railways	Percentage British to Prussian-Hessian State Railways
Mileage operated	23,335	23,387	
Capitalization (or cost of construction) per mile..	\$114,000	\$274,562	240.8%
Passengers per mile of line	48,022	55,874	116.2%
Tons of freight per mile of line	16,901	21,996	130.1%
Total passengers and tons per mile of line.....	64,923	77,870	119.9%
Revenue train miles per mile of line	12,565	18,096	143.0%
Average revenue per revenue train mile	\$1.762	\$1.31	
Total earnings per mile of line	\$22,144	\$23,773	107.9%
Operating expenses per mile of line	\$14,866	\$15,076	101.4%
Percentage operating expenses to total earnings.	67.27	63.4	
Net earnings per mile of line	\$7.278	\$8,697	119.5%

in weight.¹⁴ Competition and the demands of the public have also caused the British roads to give a freight service which in speed and regularity would be regarded as largely a fast freight, or even an express, service in the United

States. With only these facts as bases, the conclusion would be reached that the British roads are quite as economically operated in proportion as the Prussian-Hessian.

But while the British roads handle more tons and almost as many passengers per mile as the Prussian-Hessian roads, they do not haul them anywhere near as far on the average. It is believed the average journey in the United Kingdom is only about 8 miles, or but little over one-half what it is in Prussia-Hesse; and the average haul per ton only about 25 miles, or little more than one-third what it is in Prussia. Furthermore, the average wage of railway employ  s seems to be higher in Prussia than in the United Kingdom. Perhaps it will assist in reaching a conclusion regarding the relative economy of operation in the United Kingdom and in Prussia-Hesse to compare the statistics of the North Eastern, the only British road that compiles passenger mileage and ton mileage figures, with the statistics of the Prussian-Hessian lines. Such a comparison is made in Table VIII.

In view of all the conditions, we should expect the operating expenses of the North Eastern to be materially higher in proportion to its density of traffic than those of the Prussian-Hessian lines. And, as a matter of fact, while the North Eastern handles only about 90 per cent. as many passenger miles and 76 per cent. as many ton miles per mile as the Prussian-Hessian roads, its operating expenses per mile are 36 per cent. greater than those of the Prussian-Hessian roads.

The British railways were very expensive to build. The companies had to spend great sums to get their franchises through Parliament; and governmental requirements regarding the construction and maintenance of their properties have been costly. Fifty-six per cent. of their mileage had two or more tracks in 1909, as compared with 42 per cent. for the Prussian-Hessian roads. The small

¹⁴ L. G. McPherson: "Transportation in Europe," p. 247.

TABLE VIII

Comparative Statistics for Prussian-Hessian State Railways and the North Eastern of England, 1909

	Prussian-Hessian State Railways	North Eastern of England	Percentage North Eastern to Prussian-Hessian State Railways
Mileage operated	23,154	1,722	
Capitalization (or cost of construction) per mile..	\$110,727	\$225,104	200.7%
Passenger density (passengers carried one mile per mile of line)	675,032	613,000	90.8%
Average journey, miles...	14.4	14	
Average passengers per train	85	61	
Average rate per passenger mile, cents	94	1.23	
Freight density (tons hauled one mile per mile of line)	1,069,743	814,713	76%
Average haul, miles	69	23	
Tons per train	233	123	
Average rate per ton mile, cents	1.24	2.3	
Total earnings per mile of line	\$21,056	\$30,834	146.4%
Operating expenses per mile	\$14,527	\$19,768	136%
Percentage operating expenses to total earnings.	70	64	
Net earnings per mile....	\$6,529	\$11,066	169%

loads in which the British roads handle their traffic makes it necessary for them to provide more locomotives and cars in proportion than the Prussian-Hessian lines.¹⁵ All these things help to explain why their capitalization per mile is 141 per cent. greater than that of the Prussian-Hessian roads. It is, indeed, the greatest in the world. They do not seem, however, to explain it fully. Undoubtedly a large part of this capitalization has been accumulated by making from new capital many expenditures that would have been made by the railways of the United States from earnings. Except for this practice the reported operating expenses might be even larger than they are.

Some able students of railway affairs in England have severely criticised the British railways on the ground that they are uneconomically operated. About twelve years ago Sir George Paish, editor of the London *Statist*, published a series of articles¹⁶ sharply contrasting railway operation in the United States and the United Kingdom, and urging British railway managers to adopt the "American method" of economizing in operating expenses by increasing trainloads. As a means to this end he urged them to compile more complete statistics, especially those relating to tons hauled one mile, passengers carried one mile, and the numbers of tons and passengers per train. Sir George Gibb, then general manager of the North Eastern, adopted the policy advocated. The same policy has been continued by his successor; and the average freight trainload of the North Eastern has been

¹⁵ In 1909 the Prussian-Hessian roads had 838 locomotives and 19,606 cars of all kinds per 1,000 miles of line, while the railways of the United Kingdom had 980 locomotives and 36,060 cars of all kinds for every 1,000 miles of line.

¹⁶ Subsequently republished in a book entitled, "The British Railway Position."

increased from 84 tons in 1902 to 134 tons in 1912. But even the statistics of the North Eastern do not make a very favorable comparison with those of the Prussian lines; its average freight trainload is only one-half as great as that of the Prussian lines; and, on the whole, the inference seems justifiable that the Prussian State railways have been more economically managed than the British private railways.

Probably the state railways that operate under conditions most similar to those under which the British roads operate are those of Belgium. Some comparative statistics for these countries are given in Table IX. Even in Belgium the average journey and the average haul per ton are probably twice as long as in the United Kingdom.

TABLE IX

Comparative Statistics for the Belgian State Railways and the Private Railways of the United Kingdom, 1910

	Belgian State Railways	British Private Railways	Percentage British to Belgian Railways
Mileage operated	2,670	23,387	
Capitalization (or cost of construction) per mile.....	\$187,856	\$274,562	146.2%
Passengers per mile of line..	72,311	55,874	77.2%
Tons of freight per mile of line	19,782	21,996	111%
Total earnings per mile of line	\$22,668	\$23,773	104.9%
Operating expenses per mile of line	\$14,558	\$15,076	105.6%
Percentage operating expenses to total earnings	64.2	63.4	
Net earnings per mile of line.	\$8,112	\$8,697	107.2%

As shown by Table IX the British roads handle 77 per cent. as many passengers per mile as the Belgian roads and 11 per cent. more tons, have operating expenses per mile 5.6 per cent. greater, and a capitalization per mile 46 per cent. greater. However, the British roads perform many services for shippers that the Belgian roads do not, and, on the whole, give a better service.

Conditions in Germany are more favorable for efficient operation of state railways than anywhere else in the world. This is especially true in Prussia. It is very hard to make an even approximately satisfactory comparison of the Prussian-Hessian railways with those of the United States because the differences between the commercial, industrial and transportation conditions under which the two networks of railways operate are so great. Furthermore, the labor, social and political conditions are so different that the results gained under a given policy in the one country are little or no indication of what results would be secured under it in the other. What is Prussia's meat might be America's poison; and *vice versa*. Nevertheless, there are given in Table X some comparative statistics for the railways of Prussia-Hesse and the United States as of 1910.

One of the most striking differences is between the passenger traffic figures. The Prussian-Hessian lines carry passengers an average of less than one-half as far as the railways of the United States as a whole; and their volume of passenger traffic is over five times as great. Their density of freight traffic in 1910 was slightly greater than that of the railways of this country. The freight here includes more cheap and bulky commodities than there; and in Prussia-Hesse freight includes the goods handled here by express companies, although it excludes the large parcels post business; and the average haul per ton there is only one-half as long as it is here. Over 50

TABLE X
Comparative Statistics for Prussian-Hessian State Railways and the Railways of United States Group II and the Entire United States, 1910

	Prussian-Hessian State Railways	Railways of United States Group II	Percentage All U. S. Railways to Prussian Railways	Percentage U. S. Group II Railways to Prussian Railways
Mileage operated	23,335	240,439	23,815	
Average capitalization (or cost of construction) per mile	\$114,000	\$62,657		54.9%
Passenger density (passengers carried one mile per mile of line)	693,921	138,169	314,187	45.2%
Average journey, miles	14.1	33.5	22.82	
Average passengers per train	87	2,757	63	
Average train miles per mile of line	7,741	2,757	5,518	71.2%
Average freight train miles per mile of line	.884	1,938	1,695	
Freight density (tons hauled one mile per mile of line)	1,150,490	1,071,086	2,707,011	243.1%
Average haul, miles	68	138	127.68	
Average tons per train	936	380	502	
Freight train miles per mile of line	4,326	2,286	4,832	100.1%
Average rate per ton mile, cents	1.248			
Total earnings per mile	\$22,144	\$11,653	\$94,495	52.1%
Operating expenses per mile	\$14,866	\$7,658	\$16,256	111.1%
Percentage earnings to expenses	67	66	66.03	109.3%
Net earnings per mile	\$7,278	\$3,895	\$8,383	114.9%

per cent. more passengers are carried per train in Prussia than here; and therefore a passenger traffic over five times as dense as ours is handled with less than three and a half times as many passenger train miles per mile of line. On the other hand, while the densities of freight traffic in the two countries are about the same, the railways of the United States in 1910 hauled 380 tons per train and those of Prussia-Hesse only 236 tons per train. In consequence, the railways of this country, to handle a freight traffic 93 per cent. as heavy as that of Prussia-Hesse, ran less than half as many freight train miles per mile.

The American roads, from the standpoint of economy, had one very serious disadvantage as compared with the Prussian-Hessian roads. In this country the wages of labor constitute two-thirds of operating expenses. Now, the average daily wage of railway employés in Prussia-Hesse is only about one-half what it is in the United States. How important is the effect of this difference in wages is indicated by the fact that if the average daily railway wage in the United States in 1910 had been as low as it was in Prussia-Hesse, and other things had remained equal, the operating expenses per mile of the railways of the United States would have been about \$5,400 instead of \$7,658, or over one-third less than they were, and their net earnings per mile would have been about \$6,100, instead of \$3,895, or almost 60 per cent. greater than they were. This difference in wages is not compensated for by a difference in the character of the employés. The employés of the Prussian-Hessian lines are all Germans, most of them educated, many of them habituated by military training to steadiness and obedience. The station, telephone and telegraph, train and shop employés of the railways of the United States are among the best skilled labor in the world; but the average quality of railway labor in this country is seriously

pulled down by the track laborers, numbering about 400,000, or almost one-fourth of all employés. These are chiefly Greeks, Italians, Polacks, Slavs, Mexicans and American "hoboes"; and their efficiency is extremely low.

Now, while the passenger traffic handled per mile by the railways of the United States in 1910 was only 20 per cent. as great as that handled by the Prussian railways, and the freight traffic per mile was 93 per cent. as great, the operating expenses per mile of the railways of the United States were only 51.5 per cent. as great as those of the railways of Prussia-Hesse. Furthermore, the net capitalization per mile of the American lines, as reported by the Interstate Commerce Commission, was only 55 per cent. as great as the cost of construction per mile of the railways of Prussia-Hesse.

A more instructive comparison can be made between the railways of the United States in what is known as "Interstate Commerce Commission Group II"—those in New York, Pennsylvania, New Jersey, Delaware and Maryland—and the railways of Prussia-Hesse. The average journey in Group II was substantially longer, and the average haul per ton almost twice as long as on the Prussian-Hessian lines. The passenger traffic of Group II was 45 per cent. as heavy as that of the Prussian-Hessian roads, and the freight traffic 143 per cent. heavier. The gross earnings, operating expenses and net earnings per mile were closely comparable. (See Table X.) In other words, while paying over twice as high wages as the railways of Prussia-Hesse, the railways of Group II handled per mile almost half as much passenger traffic and almost two and one-half times as much freight traffic, and received only 11 per cent. more earnings and incurred only 9 per cent. more expenses. If the average daily wage paid to labor by the railways of Group II

had been as low as the average daily wage paid by the railways of Prussia-Hesse their operating expenses per mile would have been approximately \$11,500 instead of \$16,256, or about 29 per cent. less than they actually were. They would then have handled 45 per cent. as much passenger traffic and 143 per cent. more freight traffic per mile as the Prussian-Hessian roads for only 77.2 per cent. as great operating expenses per mile.

The main reason why the railways in Group II handled so much more traffic than the Prussian lines for practically the same earnings and expenses, while paying much higher wages, was that they hauled an average of 502 tons of freight per train, as compared with 236 tons per train for the Prussian-Hessian lines. In consequence, they moved their much heavier freight traffic with almost exactly the same number of freight train miles per mile of line.¹⁷

The railways of different countries do not compile their statistics on exactly the same bases. It is fair to assume, however, that if the data given in the foregoing were all recast and put on the same bases the changes made would be as favorable to private management in some cases as to government management in others. Thirty-five years ago a government commission in Italy, after the most thorough investigation ever made regarding the relative ad-

¹⁷ The number of freight train miles per mile of road on the Prussian-Hessian lines was 4,824; on the railways of Group II, 4,832. The average capacity of freight cars in Prussia-Hesse in 1909 was 15.5 tons; in the United States, 35 tons. There are also great differences in the tractive power of locomotives. It is these powerful engines and big cars, and constant supervision of trainloading, that chiefly explain the economy with which freight is handled in this country. The only country approaching the United States in this respect is Canada; and there what are significantly known as "American methods" are used by railway officers most of whom received their training in the United States.

vantages of government and private management of railways, reached the conclusion that state management was usually more costly than private management. The evidence now available cannot be said to suggest an opposite conclusion. On the contrary, the preponderance of it seems to support the conclusion reached then, and also the conclusion reached in earlier chapters, that state management in the United States, under the conditions existing here, would be more expensive than private management. State management in some countries is economical; but it is significant that it appears to be most economical in countries such as Prussia and Japan, where the conditions are very different from what they are in the United States.

Relative economy does not alone determine which form of management is the more advantageous to the public. It might be that government management in the United States would be more costly than private management, but that the service given under it would be better, the rates charged more equitable, the treatment of railway labor more in accord with the social welfare, and political conditions more pure and wholesome. These are matters which remain to be considered before we can reach a conclusion as to whether private or government management would probably be the better for the American public.

CHAPTER X

ADEQUACY OF SERVICE

THE economy with which railways are managed is of great public importance, but hardly less important and in some respects more important, is the character of the service that they render. The chief standards of railway service are how it helps to develop the traffic, and how it deals with the traffic already developed; the two main factors of good service, adequacy and quality. The adequacy of the service depends on the extent and intensiveness of the development and utilization of the means of transportation, extensive development being more important to the welfare of new countries, intensive, to that of old and populous ones. The quality of the service depends on the speed, regularity and convenience of trains, on the comfort and luxury of the station and train service, on the safety of operation, etc.

The managements of private and government railways are influenced by somewhat different motives and considerations in developing and rendering service. Under private management new lines will ordinarily be built, and service improved and increased, where there is the best chance of adding to net earnings by so doing. There is usually the best chance to add to net earnings by these means where the potential and existing traffic are the largest in proportion to the transportation facilities already provided; and it is usually by improving and increasing the service at such places that the public welfare may be most effectively promoted. Ordinarily, there is competition in

service between private railways. France is the only country where private management has preponderated in which the government from the earliest railway history has tried with success to prevent railway competition. The governments of most countries, especially those of England and the United States, have encouraged, and even compelled competition. The managements of private railways sometimes have saved money by agreements to restrict competition in service; but usually their tendency to endeavor to increase their business by trying to wrest traffic from one another and to develop traffic that others might otherwise get, has prevailed over their desire to make economies by agreements and coöperation regarding service. Competition operates directly only between competitive points, and is, therefore, apt to cause discriminations against places having but one railway. But the management of a private railway always has more or less desire, according to its degree of public spirit and business acumen, to please all of its patrons; and, besides, legislation, especially in France, the United States, England and Canada, has provided regulating bodies which closely supervise the service of private railways, particularly at non-competitive communities.

Government ownership greatly reduces or abolishes competition. It cannot exist between different lines owned by the same government; and where there are both private and state lines, the governments usually prohibit competition between them. Shippers and travelers cannot, as under private ownership, give their patronage to the railways that render good service and withdraw it from those that render poor service, thus by an appropriate system of rewards and punishments encouraging enterprising management. The character of the service under government ownership depends largely on the zeal of the officers of the railways for pleasing the public and promoting the

general welfare; and this, the advocates of public ownership contend, can be more safely relied on by the public than the motives that influence private stockholders and managers. The elimination of competition by consolidation of the railways also makes it practicable, it is argued, to effect economies by abolishing wasteful duplications of service; and the money thus saved can be laid out in improving the service in general. The net earnings in excess of interest requirements, if any there be, can be used for the same purpose, if the public so desires, while under private ownership they probably would be paid out to the stockholders.

Doubtless we can best judge by actual past and present experience whether the motives of private or government managements to render good and adequate service are the more effective.

The mileages of line and track provided in proportion to area and population are partial measures of the adequacy of the service furnished. The leading state railways in old, populous and highly developed countries are those of Prussia-Hesse and Belgium. Perhaps those of Switzerland should be included. The leading private railways in countries where conditions are somewhat similar are those of the United Kingdom and France. The only part of the United States which in density of population and in industrial development approaches the countries of Western Europe is what is known as "Interstate Commerce Commission Group II," embracing New York, Pennsylvania, New Jersey, Maryland and Delaware. The mileages of railway line per 100 square miles of area in 1910 in some countries where government ownership is preponderant and in some others where private ownership is preponderant, were:

Countries Where Government Ownership is Preponderant	Countries Where Private Ownership is Preponderant
Belgium .....46 miles	United States, Group
Switzerland .....18 "	II .....22 miles
Germany .....18 "	United Kingdom ...19 "
Austria-Hungary ...10.6 "	France .....15 "
Italy .....9.5 "	Sweden .....5.0 "
Norway .....1.5 "	Spain .....4.7 "

The mileages of railway track¹ per 100 square miles of area in some of the most developed countries in 1909 were:

Belgium .....30 miles	United Kingdom...32.65 miles
Prussia-Hesse .....24 "	United States, Group
	II .....31 "
	France .....17 "

Fifty-six per cent. of the British lines had two or more tracks; 55.6 per cent. of the Belgian lines; 42 per cent. of the Prussian-Hessian lines; 43 per cent. of the French lines; and 31 per cent. of the mileage of United States Group II.

New countries require extensive more than intensive railway development. In Australia, where government ownership prevails, there was in 1910 .6 of a mile of line per 100 square miles of area; and in Canada, where private ownership is greatly preponderant, there was .66

¹ A "mile of line" or "mile of road" means a mile of right-of-way, whether there are one, two or more tracks. A "mile of track" means just what it implies; and a mile of line or road with two tracks would count as two miles of track; a mile of line or road with three tracks would count as three miles of track, etc. Under "miles of track" is also included the mileage of siding tracks, yard tracks, etc. The mileage of line or road indicates better the extensive development of a railway; the mileage of track, its intensive development.

of a mile. In Argentina, another new country, where 86 per cent. of the mileage is privately owned — 80 per cent. being owned by English companies — there were in 1910 1.6 miles of line per 100 square miles of area. In the United States, which is largely new, the mileage per 100 square miles in 1910 was 8.08.

The volume of freight and passenger traffic to be developed and handled depends on the number of people to be served as well as on the area over which the railways are spread. The mileages of line per 10,000 inhabitants in some countries where government ownership is preponderant, and in some others where private ownership chiefly prevails were, in 1910:

Countries Where Government Ownership is Preponderant	Countries Where Private Ownership is Preponderant
Switzerland .....8.2 miles	Sweden .....16 miles
Norway .....8.2 "	United States, Group
Belgium .....7 "	II .....12 "
Germany .....5.8 "	France .....7.5 "
Austria-Hungary ...5.4 "	United Kingdom ...5.2 "
Italy .....3 "	Spain .....5 "

The mileages of track in 1909 per 10,000 inhabitants in the following countries, were:

Prussia-Hesse .....8.11 miles	United States, Group
Belgium .....4.55 "	II .....17 miles
	France .....9.8 "
	United Kingdom ...8.8 "

As to newer and less developed countries, in Australia, under government ownership, the mileage of line per 10,000 inhabitants of 1910 was 32, while in Canada, chiefly under private ownership, it was 34.9. In the entire United States in 1911 it was 26.4.

It is often assumed in discussions of government ownership that whether this policy be desirable or not in old and fully developed countries, it is clearly desirable in new countries. There is more risk that traffic and earnings will be small in new countries, it is said, and therefore, capitalists are less likely than the state to be willing to build new mileage rapidly in such countries. Australia, Argentina and Canada afford the best contemporary examples of the development of railways in new countries. The natural resources of Australia, where government ownership has always prevailed, are as great in proportion as those of the other countries mentioned; and the difficulties of construction are, on the whole, no greater. Under private ownership in Canada there has been for some years one transcontinental line and there soon will be three. There is also one in Argentina in connection with the Chilean railways. In Australia projects for transcontinental construction only recently have been decided on, and there is an enormous territory in central and northern Australia which is as yet entirely without railway facilities. The increases in mileage between 1880 and 1911 in Australia, Argentina and Canada are shown in the following table:

	Mileage in 1880	Mileage in 1911	Increase	Increase Per cent.
Australia	3,580	16,078	12,498	349
Argentina	1,408	19,843	18,435	1,310
Canada	6,874	25,400	18,526	269

The area of Australia is almost three times as great as that of Argentina, and is 79 per cent. as great as that of Canada, but the mileage built in Argentina as well as in Canada during the last 23 years has been 50 per cent. greater than that built in Australia. Furthermore, these figures

do not do justice to Canada, for in that country there were 11,633 miles under construction in 1911, of which 1,560 miles were really in operation, although not thus officially reported. In the year ended June 30, 1912, the Canadian mileage in operation had increased to 26,727 miles, and there were still 8,825 miles reported under construction. About 3,400 miles of this was completed, of which over 1,600 miles were really in operation. When the lines being built in Canada are finished the mileage in that country will be 35,600 miles, or almost three times that of Australia in 1911. While two transcontinental lines are projected in Australia, the total mileage under construction there probably does not exceed 4,000 miles. Much of the private mileage in Canada has been built with the aid of government subsidies, but most of the Australian lines did not earn their operating expenses and interest until recent years, which means, in effect, that new construction in Australia as well as in Canada has been subsidized with funds raised by taxation.

The potential capacity of a railway depends on its equipment, of course, as well as on its trackage; and its actual capacity on the way both are used, as well as on their amount. The accompanying tables show that the state railways of Belgium are first in the ratio of the number of their passenger cars to the population served; the private railways of the United Kingdom, second; the state railways of Prussia-Hesse, third; the state railways of New South Wales, fourth; the railways of France, fifth; the railways of Canada, sixth, and the private railways of the United States, last. The average capacity of cars in the United States probably is greater, however, than in any other country. On the state railways of Prussia-Hesse, for example, it is 49; on the government railways of New South Wales, 53; on the Pennsylvania Railroad, 63.

PASSENGER AND FREIGHT CAR CAPACITY OF VARIOUS RAILWAYS

Country	PASSENGER cars per 1,000 miles of line	PASSENGER cars per 10,000 in- habitants	FREIGHT cars per 100 miles of line	FREIGHT CAR capacity per 100 miles of line	FREIGHT CAR capacity, tons, per 10,000 in- habitants
Prussia-Hesse (1909)	1,609	9.78	1,753	27,123	1,537
Belgium (1909)	1,432	13.4	3,065	27,585	1,432
United Kingdom (1909)	2,270	11.9	3,202	28,818	1,606
France (1909)	1,159	7.3	1,281	16,684	1,059
U. S., Group II (1909)	516	6.2	2,113	74,948	
New South Wales (1912)	434	9.76	438	5,007	1,130
Canada (1912)	178	6.8	577	15,813	6,060
United States (1912)	210	5.304	917	34,402	8,662

NOTE.—Average capacity per freight car in both United Kingdom and Belgium estimated at 9 tons.

Both in freight car capacity provided per mile of line and in the ratio of their freight car capacity to the population served, the private railways of the United States lead all. With a freight traffic density slightly less than that of the railways of Prussia-Hesse, they have a substantially larger density of freight car capacity. The railways of the United Kingdom seem to come second in this respect; those of Belgium, third; those of Prussia, fourth. The freight car capacity per mile of the Canadian roads is three times as great as that of the New South Wales roads.

The capacity of the freight cars of the railways of the United States in proportion to the population served is almost six times as great as that of the freight cars of the state railways of Prussia-Hesse, and almost eight times as great as that of the freight cars of the state railways of New South Wales. The railways of Canada are second in this respect; those of the United Kingdom, third; those of Prussia-Hesse, fourth; those of Belgium, fifth; those of New South Wales, sixth; those of France, last.² If we knew the freight car capacity per 10,000 inhabitants of the railways of United States Group II we should find that it exceeds that of the railways of any country or part of a country.

The railway capacity a nation requires depends not only on its area and population, but also on the amount that its people travel and on the quantity of goods that they ship. The number of miles traveled per person depends somewhat on the rate-making policy of the rail-

² An additional point of importance is that there are 500,000 private freight cars on the railways of the United Kingdom, which about doubles their freight car capacity, and makes it far greater in proportion than that of any other railways in Europe. There are also many private freight cars on the railways of the United States which are not included in the figures given in the text.

TRAFFIC PER TRAIN AND PER INHABITANT IN VARIOUS COUNTRIES

Country	Passengers per train	Miles trav- eled per inhabitant	Tons per train	Tons hauled one mile per inhabitant
Prussia-Hesse (1909)	85	367	233	606
Belgium (1909)		319		361
United Kingdom (1909)		301		288
France (1909)	66	254	179	359
U. S., Group II (1909)	60	348	479	2,950
New South Wales (1912)	121	642	90	507
Canada (1912)	62	404	325	2,716
United States (1912)	57	346	409	2,756

NOTE.—Miles traveled and ton miles hauled per inhabitant in United Kingdom estimated.

roads, but more on the ratio of the population of large cities to the total population. Large cities cause a heavy suburban travel; and the daily flow of many thousands between the business and the residence and suburban districts of cities piles up the figures of passenger traffic faster than any other influence. The freight traffic handled per inhabitant depends on the amount and nature of the commercial and industrial activity and development of the country; and this, in turn, to a considerable extent, on the rate-making policy of the railways.

The table on page 190 discloses the remarkable fact that the average miles traveled per inhabitant is greater in New South Wales than in any other country. This is due to the very large ratio that the suburban traffic within a small radius of the business districts of Sydney and Newcastle bears to the total passenger traffic. The number of passengers hauled per train indicates pretty well the relationship between the demand for and the supply of passenger facilities; and the number of passengers per train in the United States is relatively small.

The number of ton miles hauled per inhabitant in United States Group II is almost five times as great as in the most highly developed industrial country of Europe, namely, Prussia-Hesse; and the ton miles hauled per inhabitant in the United States as a whole in 1912 slightly exceeded the number hauled in Canada, and greatly exceeded the number in any other country in any year. Although both Canada and Australia are new countries where the traffic consists chiefly of bulky commodities, the railways of Canada provided over five times as much freight car capacity in proportion to population, and hauled over five times as many ton miles per inhabitant, as the state railways of New South Wales. While the private railways of the United Kingdom have provided more freight car capacity in proportion than the state

railways of Prussia-Hesse, the Prussian-Hessian lines haul much more freight traffic in proportion to population than those of the United Kingdom.

The really crucial test of the adequacy of a country's transportation facilities, however, is whether, when traffic is offered, it is satisfactorily handled.

Both government and private railways appear usually to furnish approximately enough facilities for handling their passenger traffic satisfactorily; but this is not always true. Of the railways mentioned in the foregoing table the greatest number of passengers per train were carried by the state railways of Prussia-Hesse and of New South Wales; and in both Prussia and Australia there is some crowding of trains, especially in the lower classes of service and in the suburban districts. In Prussia 46 per cent. of the passengers use the fourth class service, the rates for which are very low; and in fourth class compartments "only a limited number of seats are provided for the first-comers—the other passengers stand. As a rule, those who stand in fourth class compartments far outnumber the fortunate few who have seats."³ The "Central" railway station at Sydney, New South Wales, is about a mile and a half from the real center of the city, and the government tramways on which suburban dwellers must go to and from this station are as overcrowded as many privately-managed street railways in the United States. The crowding of the suburban trains serving the large cities of Australia, especially Melbourne in Victoria, and Sydney in New South Wales, has been the subject of much complaint by the Australian press. The suburban trains of Melbourne are asserted to be a

³ "The Administration of the State Railways of Prussia-Hesse," by W. J. Cunningham, Assistant Professor of Transportation, Harvard University. Presented before the New York Railroad Club, April 18, 1913.

"scandal." "It is rarely one can obtain a seat during the busy hours of the day."⁴ However, there are more or less complaints about "rush-hour" overcrowding of suburban trains in every country having large cities; they are often due to conditions beyond the control of railway managements; and they are as apt to be heard in Chicago or Boston as in Sydney; in London as in Berlin.

Inadequacy of railway freight facilities is practically unknown in the United Kingdom under private ownership. There is also normally a sufficiency of rolling stock on the Belgian state lines, although there is frequently some shortage of "wagons" for about a month when the beet root crop is moving.⁵ On the other hand, there have been serious "car shortages," as they are called, in recent years on the railways of the United States and of some other countries.

When car shortages occur here they usually begin around October 1, reach their maximum in that month or November, and disappear before January. The longest on record began in the fall of 1906 and lasted until June, 1907. The largest net shortage ever attained⁶ was in February, 1907, and was 137,847 cars. There was a net shortage in October, 1907, of 82,811 cars; and one in November, 1912, of 51,259 cars. While these conditions are called "car shortages," this term is largely a misnomer. Doubtless there have been times when there really were not enough cars. More often the trouble has been due to failure to make the best use of the cars available, either because the shippers have detained them un-

⁴ *Pastoralists' Review*, Oct. 12, 1911.

⁵ Report of the British Board of Trade on Railways in Belgium, France and Italy, p. 59.

⁶ There always are some cars scattered over the country for which there are no orders, even when, in general, there is a shortage. "Net shortage" is the difference between the total shortage and the total surplus.

duly for loading and unloading, or because the railways have lacked power, or because there has been congestion of inadequate main and terminal tracks. However, the symptoms and effects always are the same as those of an actual shortage of cars. It becoming impossible to move the traffic promptly, farmers see their wheat rot on the ground, manufacturers cannot get needed fuel and raw materials, jobbers cannot deliver, or retail merchants secure goods as business conditions demand; and there is great inconvenience and loss.

It has often been assumed in the United States that conditions such as these are peculiar to this country. Railway managers have attributed them to their inability to raise adequate capital, and have blamed "burdensome and restrictive" public regulation. Other persons have attributed them to want of foresight on the part of the railway managers and to the practice of economies which increase net earnings at the cost of proper service; and government ownership sometimes has been advocated as a remedy. But shortages of railway facilities are not confined to the United States; nor are they experienced only on railways under private management. There was a serious one in Canada, where private ownership greatly preponderates, in the fall of 1912. In France, where there is both private and public ownership, "The shortage of wagons is a general complaint," said the investigators for the British Board of Trade.⁷ "This is the cause of complaining in other countries," they added, "but is aggravated on certain lines in France"; and the Western Railway, which is operated by the government, was cited as an extreme example. Shortages of cars were chronic on the Italian railways under private management, and have continued to be under public management.

⁷ "Report on Railways of Belgium, France and Italy," p. 200.

There have also been serious deficiencies of rolling stock on the state railways of Austria and Hungary. For financial reasons expenditures on improvements have "been postponed so long that the time has now arrived when the railways have not been able to cope with the traffic, either in despatch or in the provision of trucks for conveyance." The Vienna Chamber of Commerce in its report for 1907 said: "Unfortunately our railways have proved quite incapable of coping with the great increase of traffic. All the main railways, but more particularly the Nordbahn (Northern), which passed into the possession of the state as from January 1, 1907, have suffered from scarcity of wagons and locomotives such as has not been hitherto experienced. In addition to this the stations were insufficiently equipped as regards the number of trucks and sheds for dealing with goods; and further, on many of the main railways defects in the superstructure were brought to light."⁸

Perhaps the loudest and most frequent and prolonged complaints regarding car shortages have been heard in Germany, and especially in Prussia. There was a shortage of cars in the Rhenish-Westphalian coalfields for four months in 1905.⁹ The condition recurred in aggravated

⁸ Board of Trade Report on the Railways in Austria and Hungary, p. 68.

⁹ Mr. Schwabach, the British consul-general at Berlin, reported that in the last four months of 1905 the shortage of 10-ton trucks in the Rhenish-Westphalian coal-mining district was 249 to 4,415 a day; and Francis Oppenheimer, the British consul-general at Frankfurt-on-the-Main, wrote: "The mining industry was at times compelled to work intermittent shifts because there was no possibility of despatching the output. In a similar way the scarcity was felt in the iron industry, by agriculture, in the traffic of piece-goods, etc." Dr. F. P. Koenig, British consul at Dusseldorf, wrote in May, 1906: "It is a matter of fact that the German state railways are no longer able to cope with the increasing amount of goods transport, and that something will have to be done to alleviate the pres-

form in the falls of 1906 and 1907.¹⁰ The Prussian government then decided to spend almost \$55,000,000 for freight cars. Nevertheless, another shortage came in August, 1912, and lasted until the end of the year. In the great Ruhr coal district alone it grew in the early part of December to 12,000 cars a day; and the situation became so acute that the administration stopped all the traffic along the west bank of the Rhine for four days. The shortage mentioned, being three per cent. of the total number of freight cars in Prussia, was equivalent to one of 60,000 cars in the United States. And the discussions in the Reichstag show that the condition was felt not only in the Ruhr district, but throughout the country, the agricultural and mercantile, as well as the mining and manufacturing, interests suffering from it. The facts demonstrate that car shortages occur in Prussia as often, last as long, and are as large in proportion as in the United States.

The Imperial Constitution of Germany requires the Prussian State Railway Administration to furnish rolling stock to all of the state railways of the Empire. Its failure to provide an adequate supply has been severely criticised.

sure on the railroads, especially so in the Westphalian coal and iron districts and in the Rhenish province great industrial centers."

¹⁰ "Heavy losses were caused to industry during the year by the scarcity of wagons. Between October 1 and December 15 in the Ruhr district out of 1,296,892 trucks applied for, no less than 130,049 were failing. The shortage of wagons in the Ruhr district amounted in the first three months of 1907 to 6.38 per cent. of the number demanded, and in the last three months of 1907 to 7.27 per cent. of the number demanded."—Annual Report of the Essen Chamber of Commerce for 1907.

Mr. Oppenheimer, the British consul-general at Frankfurt, reporting on the conditions in 1906 said that the shortages of coal cars in the Ruhr district was 175,081 and the total shortage in all the Prussian coal fields 259,714. It is not meant by this that there was at any one time such great shortages; the figures evidently are arrived at by adding the various daily shortages together.

The Prussian government uses a large part of the net earnings of the railways for ordinary expenses of state, and it is charged that the fear that the investment of a large amount in additional rolling stock and other needed improvements would so increase interest charges as temporarily to reduce the revenues available for government purposes is responsible for the failure to provide adequately for the transportation of freight.¹¹ It is also alleged that the "car shortages" reflect inadequacy of facilities in general, and "that the railway policy is deficient because it is a timid, hesitating policy, which has no confidence in the future industrial development of the country, and so delays to invest money in improvements."¹² A high officer of the Prussian roads has said in reply to criticisms that "the state cannot invest undue amounts of capital where it will have to lie unemployed for the greater

¹¹ "As matters are to-day the task of the railway administration is two-fold: financial and economic. To unite both in harmony has always been a matter of considerable difficulty, and it is not saying too much to assert that for years the economic requirements have had to yield place to financial considerations; that the increase of our railway accommodation and the provision of rolling stock, etc., have not taken place in a manner corresponding to the development and the necessities of traffic, and, further, that no progress of general importance has been made in the matter of our goods traffic. The reason for this inaction on the part of the railway administration is, as previously stated, to be traced in the first degree to the considerations of state finances; it is due to the necessity of handing over each year considerable amounts from the railway surpluses to the treasury."—Annual Report of the Chamber of Commerce of Essen for 1907.

¹² "It is stated that the remedy above all others is the complete separation of goods traffic from the passenger traffic; the construction of more lines from the Ruhr district and a proportionate increase in the rolling stock; the construction of wagons of greater capacity; and greater expedition in the enlarging of stations and widening of tracks."—Report of a debate in the Reichstag, *Railway Gazette* (London), Feb. 28, 1912.

part of the year."¹³ The shortages of cars in the United States seldom have lasted more than a few months; and usually during at least eight or nine months of each year there are large surpluses of freight cars, representing enormous "investments of capital that lie unemployed the greater part of the year."¹⁴

Shortages of freight facilities have also been experienced on the state railways of Australia in recent years. The principal sufferers have been the producers and shippers of grain, fruit and live stock. Large quantities of wheat grown in 1910-11 had to be unloaded on the ground at the railway stations; and heavy rains caused much of it to rot. The same thing occurred in 1911-12. A typical expression about the condition in New South Wales was that of the *Sydney Sun*.¹⁵ "The lassitude of the railway department with such a prospect confronting it (that of the large increase in the wheat growing area) is intolerable. Its apparent contemptuous disregard of the country's needs is viewed with alarm. As each harvest comes round the position is more intensified. The trade is actually paralyzed, and the future is viewed with dismay." In the week ending March 16, 1912, 2,705,587 bags of wheat were stacked at six stations on the New South Wales lines. The railways hauled away meantime only 223,991 bags.¹⁶ "Like conditions and attended by serious damage to the interests of shippers and growers were to be found, not only in the Southern states, but

¹³ From a cable despatch from Berlin, published in the *Chicago Record-Herald*, Dec. 7, 1912.

¹⁴ The large car shortage of October, 1907, in the United States was followed within two months by a surplus of 209,310 cars. This had increased on April 29, 1908, to 413,605 cars; and during fully three-fourths of the time during the last six years the car surpluses in the United States have exceeded 100,000 cars.

¹⁵ Feb. 12, 1912.

¹⁶ *Town and Country Journal*, March 27, 1912.

throughout the commonwealth."¹⁷ On March 20, 1912, a deputation from the Perth and Freemantle Chambers of Commerce waited on the Minister of Railways of Western Australia, Mr. Collier, and described the inconvenience and losses that had been suffered by shippers in that province. The Minister replied by admitting the existence of the conditions, and attributing them to the predecessors of the existing government.¹⁸

The official view in New South Wales is similar to that in Prussia. The defenders of the railway administration say that it could not have foreseen the large growth of traffic, and that, furthermore, it should not be expected to provide cars which will be used only part of the year while the interest on the investment in them accumulates throughout the year.¹⁹

The unsatisfactory conditions in Australia seem to have been due, like similar conditions at times in the United States, to an insufficiency of locomotives as well as of cars; and the inadequacy of the power of the New South Wales lines appears to have been partly due to political influences. In September, 1910, Mr. Johnson, the Chief Commissioner of Railways, warned the Minister of Railways that the supply of locomotives was inadequate;

¹⁷ *Pastoralists' Review*, Jan. 15, 1912.

¹⁸ The *Western Mail* of Perth, Western Australia, said in its issue for March 3, 1912: "The position reflects discredit upon state enterprise. . . . There has been a signal neglect to make due provision for requirements that were inevitable."

¹⁹ "When the suggestion is made that more rolling stock should have been provided in anticipation of a big rush of business, the Commissioners reply that the extra trucks might not be required if there were a partial failure of the crops, and, in any case, to build more trucks than the average traffic warrants would cause serious loss of interest, because a great deal of the rolling stock would lie idle for nine months in the year." *Town and Country Journal* (Sydney), Jan. 31, 1912.

that the locomotive building plants of the country, both public and private, were overtaxed; and that if sufficient engines were to be provided it would be necessary to import some from England. The Premier, who headed a Labor ministry, replied almost two months later that the policy of the government was against the importation of locomotives. It preferred to have them made at home so as to increase employment for domestic labor. The Australian locomotive plants proving unable to make the necessary engines, the Chief Commissioner in February, 1912, again demanded importations from England. During the two months ending on March 14, 1912, it was necessary to cancel 188 trains because there were no engines to pull them. The government then yielded, and an order was cabled to London for twenty locomotives.²⁰

²⁰ Readers in the United States are familiar with the severe criticisms, many of them just, many of them unjust, which have been visited on the railway managements in this country because of the shortages of transportation facilities and the congestions of traffic that have occurred here. That public management and its results are fully as severely criticised in some countries as are private management and its results in the United States, is illustrated by comments that are sometimes made on railway operation in Australia. For example, C. B. Trefle, of Dalgety & Company, Temora, New South Wales, was quoted in the *Sydney Sun* of February 12, 1912, as saying: "If a private company were the owners of the railways and conducted them in a similar manner to that of the state, the producers and people generally would rise in revolt. No business company with any claim to business acumen would run a large freight carrying concern like a railway system of this state in a manner such as prevails in New South Wales." In similar tone were the following comments of the *Sydney Mail* of March 20, 1912: "The whole head and front of the offending, and it is a fault common to all governments of democratic construction, is an inherent timidity against providing sufficiently far ahead. A government which has its being in the people provides for to-day only, never for the day after to-morrow. . . . So when the works which it sets in motion in order to cover the necessities of to-day are completed, too often the day after to-morrow has

It has been the policy of the Canadian roads, although most of them are privately-owned, to encourage home industry by buying their equipment in Canada. But in 1912, when there was a car shortage in that country, and the Canadian manufacturers were unable promptly to fill its orders, the Canadian Pacific came into the United States and ordered 10,000 freight cars, 73 passenger cars and 25 locomotives.

It will be seen that shortages of rolling stock are experienced in countries where the conditions are widely different. The one in Canada in 1912 cannot be attributed to sluggish development of railway facilities; for railway expansion has been proceeding faster there than anywhere else. It was due to the rapid general development of the country, and especially to the rapid increase in the crops. Any country having large crops is likely to have shortages of cars, because the bulk of the crops is always delivered to the railways within a comparatively few weeks. The shortages of cars in Australia doubtless are chiefly due to this, although railway development there has not been going forward as fast as in Canada. The car shortages in the United States are largely explicable in the same way. The industrial as well as the agricultural activity of the country has been increasing rapidly, and the greater part of the movement of fuel and raw materials for manufacturing and building purposes occurs in the fall and early winter at the time when the crop movement reaches its maximum.

The car shortages and congestions of traffic in Prussia are also in part due to the very rapid industrial development of that country. But they are also due to another form of development which the government has fostered

arrived, and the works from which great things were expected are found to be out of date." "The State Railway Muddle in Australia," by Edwin A. Pratt.

largely to relieve the railways, but which at times defeats its own purpose. This is the development of waterways, to which the government seeks by its rate-making policy to force much of the traffic. Waterways, unlike railways, cannot be built to every point where traffic may originate, and even when the German waterways are open the railways originate most of the traffic that the waterways handle, hauling it short distances to points where it is transferred. Often before it reaches its final destination it must be transferred again, this time from the waterway to the railway. Now, nothing is a more fruitful cause of delays to cars and of congestion of traffic than such transfers of large quantities of freight as the German policy causes to be greatly multiplied. Furthermore, in every industrial country the fall and winter are the period of the heaviest movement of traffic, and this is just the period when waterways in northern countries such as Germany freeze, making it necessary for the railways to handle practically all of the traffic. The German waterway policy, together with the avowed indisposition of the Prussian State Railway Administration to supply a large amount of rolling stock which will be idle during most of the year, chiefly explain the frequently recurring and acute car shortages in Prussia, whose railways, unlike those of Canada, Australia and the United States, do not have to deal with large movements of crops. In the debate on the car shortage of 1912 in the Prussian Reichstag a member suggested that the railways would be relieved to some extent if more use were made of the inland waterways. It was replied that the waterways were "the most questionable contributors to the railways; that, at times, they either bring such quantities to railway centers that the railways cannot cope with them or they fail entirely, owing to frost or drought."²¹

²¹ *Railway Gazette* (London), Feb. 28, 1913.

The experience of leading countries under public and private ownership does not seem to support the statement often made that under government ownership in this country, the railway management, being influenced less by the desire of earning profits and more by public spirit and public demands, would provide more ample facilities for handling passenger and freight traffic than do the private managements. On the contrary, experience shows that ordinarily the leading private railways furnish as adequate passenger facilities as the leading state railways, and somewhat more adequate freight service.

CHAPTER XI

QUALITY OF SERVICE

Let us now consider the quality of the service furnished by some typical state and some typical private railway systems. And first as to freight service.

The English railways perform important and expensive services preceding and following the actual transportation by rail, viz., those of collecting at and delivering from their stations in their own wagons a large part of the freight which they handle. If a concern has goods to ship it simply puts a card in a window, as an American housewife puts up a card to attract the iceman; and if a shipper forwards goods regularly the railway's wagons will call daily, or even two or three times a day, to pick them up. The compensation for this service is included in the ordinary freight rates, this being one of the reasons why English freight rates are high. The railways of the United States perform no such service; such collecting and delivering as is done here is left to the express companies. The Belgian state lines collect and deliver some goods, but under narrow restrictions as to their character and the territory covered; and extra charges are made for the service. Collection and delivery by the railways are unknown in Germany. The result has been the development of forwarding agents — "spediteurs" — who collect and deliver goods; group consignments into five- or ten-ton lots, by which they secure lower rates, the benefit of which they divide with their patrons; and furnish to shippers the information regarding rates, routes, etc.,

which is ordinarily furnished by the freight solicitors of railways under private management. Of course, the shippers must pay the *spediteurs* for their services.

Still another costly and valuable service rendered by the British railways to shippers is that of storage. At important points on their lines they have large warehouses in which "collection and delivery" traffic is often entitled to free storage for a week, and traffic arriving by boat for a fortnight. Free storage is given to some commodities for a month, and goods can be kept in the warehouses indefinitely by paying low rates. Many merchants with a considerable business have no warehouses of their own, but keep all their goods in, and job them from, the warehouses of the railways. No other railways, government or private, are so liberal with the warehousing privilege. The periods during which the Prussian state railways will store goods free are extremely short. They must then be transferred to the warehouses of the *spediteurs*, who will keep them free for 48 hours, after which storage must be paid for at the rate of 63 cents per ton per month.

In the western part of the United States, in Canada and in Australia the efficient handling of the grain crops is of great importance. In the northwestern part of this country grain is handled in bags because it can be more conveniently exported in this form, but in most of this country and Canada the elevator method of loading, unloading and storing prevails. The railways are chiefly responsible for the extensive development of elevators. They often have built them themselves. In many other cases they have leased ground on their rights-of-way for them at nominal rentals, or have leased both the ground and the elevators to grain shippers at low rates. The use of elevators is advantageous to the railways because it facilitates and reduces the cost of the loading and unloading of grain, and affords places of large capacity in

which the grain may be held when means for moving it are inadequate. Their use is equally advantageous to the farmer and grain dealer, because it expedites the unloading of the farmers' wagons and affords storage capacity for grain, not only when there are not enough cars to move it, but also when the market is unfavorable. The government railways of Australia have not provided elevators or coöperated with others in providing them, and it is largely due to the want of adequate storage facilities that the wheat growers of that country have suffered heavy losses from the destruction of their grain when the railways have been unable promptly to transport it. However, the elevators in the United States have sometimes proved inadequate in periods of acute car shortages.

The despatch with which it is desirable for goods to be carried depends on their nature. Regularity in the handling of coal, ore and other raw materials is important, speed, relatively unimportant. It makes little difference to the consignee how long such commodities are in transit, if he can rely on such delivery of them as will not interfere with the operation of his works. But in the transportation of valuable or perishable commodities—dry goods, clothing, live stock, fruits, etc.,—speed is important. The rendering of the best practicable freight service with the greatest practicable economy, therefore, involves skillful differentiation between the kinds of transportation needed by and given to the different classes of commodities. A very large part of the traffic of the railways of the United States and Canada consists of cheap, bulky commodities, such as coal, ore, grain and lumber, which are transported on unscheduled trains. In the carriage of the higher classes of commodities the railways of the United States render a fast and fairly regular service. Fast freight trains run between Chicago and New York, a distance of 1,000 miles, in 57 hours; between Chicago and

East St. Louis, 280 miles, in 15 hours; between Chicago and Kansas City, 500 miles, in 29 hours. The greatest of the world's live stock markets is Chicago. More than one-half of all the live stock moving to that market is carried there and sold on Monday of each week. The trains that handle this traffic are expected to run twelve to twenty miles an hour, including stops, according to their points of origin; and over 90 per cent. of them reach destination in time to "make" the market. The heavy trains carrying citrus fruits from California, which have to make stops for re-icing as well as for other purposes, usually make the run to Chicago, a distance of 2,300 to 2,800 miles, according to the route, in eight to eight and one-half days; and to New York, 3,300 to 3,800 miles, in ten to twelve days.

In the United States a national law prohibits live stock from being kept in transit over twenty-eight hours without being removed from the cars and fed and watered. This legislation has been adopted in the interests of the humane treatment of the animals, and of the public health. The statute is strictly enforced, and the railways are frequently fined for violating it. There is a large traffic in live stock in Australia, and there are numerous complaints about the way in which it is handled by the state railways. Many instances are cited where stock has been kept in transit as much as 45 hours without food or water. This is one out of many illustrations of the fact that governments may be more strict in the requirements they impose on railways owned by companies than on the railways that they own themselves. It is stated that the average speed of live stock trains in Victoria is 17 miles; in Queensland, 16½ miles, and in New South Wales, 11 miles. The speeds in Victoria and Queensland compare well with those in the United States, but in New South Wales they are much slower than in this country.

The prominent features of the British freight traffic and service are very small consignments, small carloads and trainloads, speed and regularity. These features are largely due to the active competition between the railways themselves, and between them and the coastwise vessels. As there is not a point in Great Britain more than 90 miles from the sea, the coastwise ships contest with unusual effectiveness with the railways for all kinds of business. It is customary for retail merchants to carry small stocks and to rely on the railways to enable them to fill them up at short intervals by frequent orders placed in the large centers by telephone or telegraph.¹ The running time of merchandise trains from London to Birmingham, 111 miles, is about five hours; to Liverpool, 199 miles, seven and one-half hours; to Dublin, 333 miles — part of this haul being by water — fifteen hours; to Edinburgh, 399 miles, eleven and one-half hours. Consignments received at the freight stations in London by 4, or even 6, P. M. are delivered regularly throughout the country by 9 o'clock the next morning.

On the continent of Europe freight traffic is divided into two classes — "fast goods" and "slow goods." Often in Germany, and commonly in France, the fast

¹ For example, on the Great Eastern 70 per cent. of the consignments of the general goods traffic weigh 336 pounds or less, and consignments of one ton or less account for 90 per cent. of the total. On the London & Northwestern the statistics of the goods received for despatch from Broad Street goods station (London) show that the average weight per package is only 72 pounds and per consignment 442 pounds. On one day it was found that the packages numbered 23,067 and were addressed to 720 different stations; their total weight being 990 tons; the average weight of each was well under 100 pounds. These 23,067 packages were loaded into 379 wagons (cars), each of which thus carried on the average 5,348 packages. "British Railways," by Hugo Munro Ross, p. 162. For the convenience of the reader the figures given by Mr. Ross have been converted into their American equivalents.

goods are handled on passenger trains, as is express in the United States. The rates for fast goods service being practically double those for slow goods service, the proportion of freight sent by the former is relatively small. The tariff regulations specify the time after goods are delivered to the railways within which they must be forwarded and the speed at which they must be moved. There is much complaint in France about the length of the periods allowed for the transportation of merchandise by the ordinary, or slow, service. These periods are not so long, however, as those allowed on the state railways of Germany. In France but one day is given after freight is received for forwarding it; in Germany, two days. In France two days are allowed, after transportation has begun, for moving goods up to 92 miles on some lines and up to 124 miles on others; and an additional day is allowed for each additional 92 miles on some lines, and for each additional 124 miles on other lines. In Germany slow goods need be moved only 62 miles the first day that they are in transit, but they must go forward 124 miles on each additional day. The distances that goods must be moved under these regulations within two to seven days after their delivery to the railways are indicated below:

	Germany	France
2 days	0 "	93 to 124 miles
3 "	62 "	170 to 248 "
4 "	186 "	247 to 372 "
5 "	310 "	324 to 496 "
6 "	434 "	401 to 620 "
7 "	558 "	478 to 744 "

The requirements imposed under government ownership on the railways of Germany are more lax than those imposed on the railways of France, most of which are private.

ly-owned. While in both France and Germany freight ordinarily is moved well within the periods fixed by the regulations, in neither is the freight service comparable in speed or regularity with that in England. There is some demand for stricter regulations in Germany, as well as in France; but the German governments are indisposed to make any changes. The present regulations have, from the point of view of the railway managements, some great advantages. They enable them to delay goods until sufficient amounts have accumulated to secure large carloads and trainloads, and to move them slowly afterward. This makes for economy by holding down both the investment that must be made in rolling stock and the cost that must be incurred in the actual service of transportation. Another advantage of the regulations is that they restrict to a minimum the claims that must be paid for delays in the delivery of consignments.²

On the state railways of Germany and Australia there is extensive use of open — i. e., uncovered — freight cars. About 70 per cent. of all the cars in Germany are open. Most less-than-carload consignments are handled there in closed cars, but carload quantities are usually carried in open cars. If the nature of the goods requires it they are covered with tarpaulin sheets. The consignor may supply these or the railway will do so, a service for which it has a regular scale of charges. For 63 to 125 miles

² "Apart from regulations which would seem to preclude the possibility of considerable claims, further regulations exist (in Germany) dealing with the payment of any which may arise. . . . Some of the large traders who have taken active measures to obtain redress by means of law courts, find their claims more frequently met, but in the general rule the State relies with success on the strict letter of the regulations." Report of British Board of Trade Investigation of German Railways, p. 116. It is hard enough for a claimant in the United States, especially if he be a small shipper, to get a settlement; but the difficulty is still greater in Germany.

the minimum charge for one or two sheets is 73 cents. In Australia some of the cars used for carrying wheat are open iron trucks ordinarily employed for carrying coal. The wheat is shipped in bags and needs protection from the weather with tarpaulins; and on certain of the Australian lines the shortage of tarpaulins following the wheat harvest has been even greater than the shortage of cars. In the United States and Canada practically all articles except those of a very non-perishable character, such as coal, ore and lumber, are carried in closed cars, and in many cases even these commodities are transported in box cars.

It is the universal custom of railways to levy charges on consignees who fail to take goods away from their freight houses or out of their cars within specified periods after notification of the arrival of the goods. When goods are left at the stations after the expiration of the "free time" the service rendered by the railway in subsequently caring for them is called "storage;" when they are left in cars it is called "demurrage." Competition under private ownership tends to make the managements liberal in giving "free time" and in fixing storage and demurrage charges. Government railways, being monopolies, are likely to be more strict in this respect. These tendencies are illustrated by the differences between the demurrage regulations in the United States, Great Britain and Germany. In the United States shippers are given forty-eight hours in which to unload carload freight, and charged one dollar per car per day for detaining cars beyond this period. In Great Britain, also, shippers are given at least forty-eight hours' free time, and they ordinarily pay seventy-three cents for each additional day's detention of a car. In many cases the charge is less³ and in many

³ "The generally recognized charge on this account is 3s. per truck

instances nothing at all is collected. In Germany the "free time" allowed is sometimes twenty-four hours, but on carloads it is usually only twelve hours. After that the detention of each car is charged for at the rate of forty-eight cents for the first twenty-four hours, seventy-two cents for the second twenty-four hours, and ninety-five cents for each additional twenty-four hours. There are wide differences between the sizes of the cars in the different countries; but in proportion to their average capacities the demurrage charges of the German state railways are substantially higher than those of the English roads and from three to five times as high as those of the American roads.⁴ Furthermore, in times of car shortage the German railway administrations drastically reduce the free time given the shipper, often making it as little as six hours.⁵ Competition and government regulation com-

per day; but the penalty is very often not enforced at all, or, where it is, the matter is mostly compromised. In South Staffordshire demurrage is strictly maintained, but even there the charge is reduced to 1s. 6d. per truck a day after three clear days. Many British traders systematically use the railway wagons as warehouses, not unloading them for weeks together, until it suits their convenience, or until the commodity they contain has been disposed of to some eventual purchaser who is willing to accept delivery. Lime is invariably kept in the railway wagons until it is wanted, and a consignment of grain or hay may be sold many times over on the market before it is finally removed from the railway wagon. Much latitude in these respects has been shown by the railway companies here, and the traders have benefited greatly therefrom, though the privileges granted have been much abused." "German Versus British Railways," by Mr. Edwin A. Pratt, p. 35.

⁴The average capacity of freight cars in the United States is about 37 tons; in the United Kingdom, about 9 tons, and in Prussia, about 16 tons. The following table gives the amounts per car that would be collected for demurrage at the end of the numbers of

⁵ "Stringent as these regulations are at ordinary times, to meet the demands arising from the inadequate supply of wagons the

bine to prevent this in England and in the United States. "Stringent enforcement of the demurrage regulations and a reduction of the already meager time allowance for the unloading of wagons are the methods by which it is endeavored (by the German State Railways) to get the fullest use of the wagons and avert, if possible, the necessity of capital expenditure on further supplies.⁶

Comparing conditions in the two leading countries of Europe, the freight service of the German State Railways

hours' detention stated, and also the amounts per ten tons of freight car capacity to which the demurrage would come:

At the end of	Prussia		United Kingdom		Percentage English roads to Prussia per 10 tons of car capacity	United States		Percentage United States roads to Prussia per ten tons of car capacity
	Per car	Per ten tons of car capacity	Per car	Per ten tons of car capacity		Per car	Per ten tons of car capacity	
12 hours	0	0	0	0		0	0	
24 "	\$4.8	\$3.20	0	0		0	0	
48 "	1.20	.75	0	0		0	0	
72 "	2.15	1.34	\$7.5	\$8.1	60.4%	\$1.0	\$2.7	20.1%
96 "	3.10	1.93	1.46	1.62	83.9 "	2.00	.54	27.9 "
120 "	4.05	2.53	2.19	2.43	96.4 "	3.00	.81	32.0 "

period of time for unloading in accordance with the provisions of the foregoing regulations is reduced to the lowest possible limit of six hours, and this, it need scarcely be pointed out, inflicts considerable hardship on the trader. . . . Cases certainly have been known in which the demurrage has been refunded where the trader has been able to show conclusively his absolute inability to unload within the stipulated time limit, owing to the glut of wagons brought in by the railways, but no obligation whatever devolves upon the railway to consider this, and in those few instances where it has been done it was purely an act of grace on the part of the administration, and under no circumstances during the period of scarcity of wagons." Board of Trade Report on Railways in Germany, pp. 113-114.

⁶ Board of Trade Report on Railways in Germany, p. 113.

is inferior in almost every way to that of the British private railways, which largely accounts for the more economical operation of the former. Turning to newer and less developed countries, the freight service of the private railways of Canada seems to be superior to that of the Australian state railways. If we should add to the comparisons so as to include the railways of the United States, the Belgian state railways, the French government and private railways, the government as well as the private railways of Canada, and, indeed, all the state and private railways of the leading countries of the world, we should but strengthen the evidence that government railways do not give better freight service than private railways, and that the freight service of the railways of the United States probably would not be improved under government ownership.

The passenger service of railways affects many more people directly than their freight service. In progressive countries the frequent travelers include a large part, and the occasional travelers practically the whole, of the population. As in countries where government ownership obtains the people are at once the patrons and the owners of the railways, there we might expect that the managers would make special efforts to supply a passenger service that would please the public. While some motives tend to make the managements of government railways very anxious to please, others strongly stimulate the managements of private railways. Passenger transportation is sold by private railways under more intensely competitive conditions than any other service. The shipper, even under private ownership, may be almost obliged to send all his goods by one railway, because it may be the only one to which he has direct access from his farm or plant. The traveler is under no such disability. Wherever there are two or more lines — and ordinarily under private

ownership, there is more than one available for every trip of considerable length — the traveler is free to buy his ticket over the one that he thinks will serve him best.

The station is the portal of the railway. The simple but imperative requirements of the commuter are met when the station affords him an ample concourse through which he can race to a train whose schedule he knows to a second. He buys a commutation ticket once or twice a month. He usually has no baggage to carry or check, and if the railway will furnish him a means of getting home to dinner comfortably and on time he will be pretty well pleased. The needs of the through passenger, whether at stations in large or small places, are more numerous and complex. He must buy a ticket, and even in large cities in the United States, where ticket offices are sprinkled everywhere, about one-half of all through tickets are sold at the stations. The through passenger must also have a place to wait for his train, and often requires one at which to check his baggage. For his satisfactory accommodation, the station must be more commodious, comfortable, and even beautiful, than it need be for the suburban traveler.

In England, where the population is so dense and the average journey so short — being only about eight miles — most of the passenger business is what would be regarded in the United States as suburban or interurban traffic. To the nature of the traffic is largely attributable the character of many English stations. The Victoria and Waterloo stations in London are fine terminals, but most of the London stations are hardly more than great sheds, low, dark and ill-lighted, and designed apparently only to afford the passenger protection in transferring between cab or street car and train. While most of the London stations, like many things English, do not appeal to the æsthetic, they minister to convenience. Their ar-

rangement makes it practicable to get to trains with the minimum of time and effort. The platforms are built up level with the floors of cars, so that the traveler does not have to climb up and down in getting on and off, as he usually does in the United States and in most of Europe.⁷ The stations usually contain restaurant accommodations, and very frequently have in connection with them hotels rendering a service of a very high order.

In architecture the French stations are superior to the English, but the finest terminals in Europe are those of the German State Railways. Treated as public buildings — as, indeed, they are — they are constructed with great engineering skill, a high sense of architectural values, and at large cost. The main station at Hamburg, and the stations at Cologne, Frankfurt and Darmstadt are notable; while the new one at Leipsic is the most splendid and costly in Europe. The German stations are as much superior in cleanliness and convenience as in architecture to most of the other stations of Europe. The provincial stations in England compare more favorably with those in places of corresponding size in Germany and France than do those of London; but, on the whole, the stations in general in Germany rank first in Europe in architecture and convenience, those of France second, and those of England third.

Formerly the typical large railway station in the United States was ugly, dark, uncleanly and inconvenient. A remarkable change has been taking place in recent years. The construction of the Pennsylvania station and the new Grand Central station in New York, the Union terminal in Washington, the Chicago & North Western terminal in Chicago and the Union terminal at Kansas City, has

⁷ The new Grand Central Station of the New York Central in New York City has high platforms similar to those in England, and the additional cost of providing them was \$100,000.

given the United States passenger terminals which, in cost, size, convenience and architectural beauty, are unsurpassed, if not unequalled.⁸ The tendency to improve passenger stations has spread from the large American cities to the small cities and towns. While there are still many stations, both large and small, throughout the United States that are ugly and inadequate, on the whole, the stations in this country are as good as those on any other railways in proportion to the passenger business handled.

Improvements corresponding to those in the United States are being made in Canada, and the station accommodations of the private railways of that country are, on the whole, extremely good. The various lines, under the Canadian Pacific's leadership, have also provided at the principal cities and summer resorts, in connection with or close to their stations, hotel service of the highest character. The station and hotel service of the private railways of Canada is, on the whole, superior to the accommodations afforded by the government railways of Australia.

For obvious reasons it is a convenience to travelers to have passenger trains run at short intervals. In frequency of train service, the railways of the United Kingdom exceed all others. Their density of passenger train service is indicated by the fact that in 1909 they ran 11,332 passenger train miles per mile of line. The railways of Prussia-Rhine, with a greater density of passenger traffic, ran only 7,570 passenger train miles per mile of line; the railways of France, 5,129; the railways of United States Group II, 4,642; the railways of the entire United

⁸ The Leipsic terminal, the most expensive in Europe cost \$40,000,000. The Pennsylvania terminal in New York cost \$115,000,000; the Grand Central terminal (New York) \$150,000,000; the Washington terminal, \$20,000,000; the North Western terminal at Chicago, \$24,000,000; the Union station at Kansas City, \$40,000,000.

States, 2,150. While the passenger train service in France and the United States, under private ownership, is less dense than it is in Prussia, under government ownership, it is greater in both of them in proportion to the traffic handled than in Prussia. Probably the Belgian state lines, with the heaviest passenger business in the world, are in point of frequency of passenger service second only to those of England.

As has been indicated in an earlier chapter, doubtless by consolidation of the railways under government ownership, some economies might be made in the United States by reducing the duplications in the passenger train service on different lines running between the same places. Probably even larger economies in proportion could be made by the same means in the United Kingdom. But lines between the same termini usually traverse different intermediate territories; and, therefore, while a reduction in the train service might not impair the service between the termini, it might impair that given to intermediate points. While there is more duplication of train service between termini in England than in Germany, the result of the running of the more numerous trains in England is to afford better service both to terminal points and to intermediate points in England.⁹ In frequency the pas-

⁹ "People often talk of competitive passenger train service as if railway companies had nothing to consider and no one to cater for beyond the passengers journeying from one terminus to the other. Take, for instance, the Scotch train service by the East and West coast routes. Suggestions are made from time to time which seem to imply that the trains via these routes do nothing but carry passengers between London and Scotland, but in point of fact, each route passes through intermediate districts with a large population which are to a great extent served by the Scotch service. The same thing is true of other competitive routes, and it might easily happen that even if all the passengers between the termini of two competing routes were to travel by one route the trains by the other route

senger train service of the Canadian roads appears to be equal or superior to that of the State railways of Australasia, except within the suburban districts of the large cities of Australia, where the density of train service is very great.

Both the maximum and the average speed at which the passenger trains of a railway system can be run depend on numerous circumstances. One, of course, is the physical condition of track and equipment. The most important is the volume of the traffic, for on this depends both the facilities that are needed and the facilities that the railway can afford to provide. If the traffic be light, the railway can afford to run only a few trains to handle it. These, in order to give adequate service at all points, must make numerous stops. The average speed must then be low, for average speed depends more on the number of stops made than on the maximum speed attained in actual running. A railway with a light traffic can afford to have only a single track; and when trains must pass each other going in opposite directions, the number and length of the delays to them is necessarily greater than when two or more tracks are provided and all trains on the same track move in the same direction. The interference of trains with each other is at the minimum and the speed that can be maintained at the maximum when the traffic is sufficient to justify the provision of two tracks for passenger traffic exclusively. Adequate local service can then be given by relatively slow trains, thus enabling express trains making few or no stops between terminals to be operated at very high speeds. It is necessary to take account of all these things before fair comparisons can be

could not be appreciably reduced in number." "Amalgamation of Railways," by A. Kaye Butterworth, of the North Eastern Railway Report of the Railway Conference under the Auspices of the British Board of Trade, 1909.

made between the speeds of trains in different parts of the same country and in different countries.

The railways of England have a very dense passenger traffic; almost half their lines have two or more tracks; their managements act under the stimulus of competition; and there are more trains in England having very fast schedules, and probably the average speed of all the passenger trains in that country is greater, than in any other country. The private railways of France seem to be second in this respect in Europe; the government railways of Germany third, although their passenger traffic is much heavier than that of the French roads, and probably is heavier than that of the English. The speeds of the trains of the state railways of Belgium are considerably less than those of the railways of either England, France or Germany, although the Belgian passenger traffic is the heaviest in the world.

Investigations made a few years ago indicated that the average hourly speed of the thirty fastest trains out of London was 52.8 miles; of the thirty fastest out of Paris, 47.7 miles; of the thirty fastest out of Berlin, 45.8 miles; of the thirty fastest out of New York, 45.2 miles. All conditions considered, this showing reflects credit rather than discredit on the railways of the United States. The density of the passenger traffic of the lines radiating from New York is only two-thirds that of the railways of France, probably only about one-half that of the railways of Great Britain, and only 42 per cent. of that of the railways of Prussia-Hesse. Besides, the American trains included in the comparison made much longer runs on the average than the European trains. Now, more stops must necessarily be made on long runs than on short runs, if for nothing but to change engines, and these more numerous stops increase the difficulty of making high average speeds. While, because of their relatively light passenger traffic,

the railways in even the eastern part of the United States do not run as many fast trains, or, indeed, as many trains of any kind, as those of England, and France and Germany, the fastest trains for short distances in the United States are as fast for similar distances as any others in the world, and the fastest trains for very long distances are faster than any other long distance trains. Trains are run regularly between Camden, N. J.,—near Philadelphia—and Atlantic City, 58.7 miles, at 60 miles an hour; between Philadelphia and Jersey City, 90 miles, at 55 miles an hour; between New York and Boston, 233 miles, at 46.56 miles an hour; between New York and Buffalo, 439 miles, at 49 miles an hour, and between New York and Chicago, 979 miles, at 48.9 miles an hour. Before the schedules of the fastest trains between New York and Chicago were lengthened from 18 to 20 hours in the fall of 1912, the average speed of the "Twentieth Century Limited" was 54.3 miles per hour. These speeds compare not unfavorably with the following on the railways of England, France, Germany and Belgium:

England

London to Birmingham, 113 miles, 56½ miles an hour.
 London to Bristol, 118 miles, 59 miles an hour.
 London to Liverpool, 201 miles, 56 miles an hour.
 London to Edinburgh, 395 miles, 54 miles an hour.

France

Paris to Jeumont, 147 miles, 56½ miles an hour.
 Paris to Bologne, 158 miles, 56 miles an hour.
 Paris to Bayonne, 486 miles, 51 miles an hour.

Germany

Berlin to Halle, 100 miles, 54.9 miles an hour.
 Berlin to Leipsic, 147 miles, 48 miles an hour.

Berlin to Hamburg, 178 miles, 54.9 miles an hour.
 Berlin to Munich, 456 miles, 47 miles an hour.

Belgium

Brussels to Antwerp, 23 miles, 44 miles an hour.
 Brussels to Liege, 62 miles, 41.4 miles an hour.

The speeds on the German and Belgian State railways are clearly slower than on the English and French private railways. A number of international expresses are operated by the railways of France, Belgium and Germany jointly. Those running from Paris to Berlin make an average speed of 59.3 miles per hour over 149½ miles on the Northern Railway of France; of 35 miles an hour over 104½ miles on the Belgian State railways; and of 42 miles an hour over 398 miles on the German State railways. This makes a total run of 651½ miles, at an average speed of 43 miles an hour. The fastest international express from France to South Germany makes 50 miles an hour during the 255-mile part of the run in France via Paris Est to Igney Avricourt, and only 40.4 miles an hour during the 312-mile part of the run from Berlin to Munich.¹⁰ While the French private railways make a good showing in respect of the speed of their passenger trains, the French State railways make an exceedingly poor showing.

The speeds of Canadian trains usually correspond roughly to those of trains in the western part of the United States, although the best trains in Canada are slower than the best trains in the western part of the United States. The speed of trains in Canada seems generally to be faster than in Australasia, except in the suburban districts. In Canada, also, the traveler can go from Montreal to Vancouver, without changing

¹⁰ *Railway Gazette*, London, Feb. 28, 1913.

cars. In Australia he cannot cross the continent by rail without breaking his journey, there being no transcontinental line, and the differences between the gauges on the railways of the different states necessitate changes of trains on many relatively short trips.¹¹

Regularity in passenger train service is as desirable as speed; and the trains of the Prussian State railways probably excel all others in this respect. They are almost

¹¹ *The Age* (Melbourne) on March 6, 1912, speaking of the Victorian railways, said that "certain speeds were established 40 years ago as the average that could be accomplished by the department, having regard to the exigencies of traffic and the combination of goods and passengers in the same train," and that there has been little improvement since. "So far from trains traveling at a faster pace, instances could be given in which the times to-day are even slower than they were a quarter of a century ago. Our trains are among the slowest in the world, and they continue so because the railway authorities have not the capacity or initiative to make them any faster."

The Pastoralists' Review for March 10, 1912, said that "the first class passenger accommodation of the one show line, Sydney to Adelaide, is worse than the third class in Great Britain."

These criticisms are doubtless extreme, but they show that government railways can no more give service so satisfactory as to escape criticism than private railways. That they are not exceptional in their severity is indicated by the remark of Henry D. Lloyd, a leading socialist writer, in his book, "Newest England," that "the 'scientific' traveler (in Australasia) could fill a volume with complaints which he could gather from the remonstrances of railway reform leagues, deputations to the premier and minister of railways, from the debates in Parliament, and from individuals with private grievances." Mr. Lloyd added, "None of the traveling accommodations of New Zealand are what could be described by the American as luxurious," and that those that have been provided for second class passengers are "primitive in the extreme. Narrow, uncushioned seats, bare floors, drafty doors and windows, make the cars cheerless and uncomfortable, although in New Zealand as elsewhere (in Australasia) the majority of the travelers are second class."

invariably on time.¹² Doubtless this is due to the military organization of the Prussian railways and to the military spirit of the Prussian people, a spirit that inevitably communicates itself to the railway service, since practically all of the railway employes have served in the army. "There is a noticeable orderliness and precision about everything connected with German railways."¹³ This orderliness and precision prevent such delays to trains at stations as are chronic in the United States. Doubtless the excellent maintenance of passenger schedules in Prussia is also partly due to the fact that they are not keyed up so high as in England, France and the Eastern part of the United States. The British railways rank a close second in regularity of train service. Train service is less dependable on the private railways of France, and is utterly unreliable on the Spanish railways and the French and Italian state railways. The train service of the United States, even the Eastern part of it, will not bear comparison in point of regularity with that of Prussia and England. One reason is that many trains have printed schedules that it is physically impracticable for them to maintain. Another is a cause already mentioned, viz., the chronic and unnecessary delays at stations, which probably abound more here than in any other leading country.

The railways of Europe, where distinctions of class between persons are more marked than in the United States, provide three classes of passenger service, for which different rates are charged. In Prussia there is also a fourth

¹² As much cannot be said for the trains of the state railways of Bavaria, which are frequently late.

¹³ "The Administration of the State Railways of Prussia-Hesse," by W. J. Cunningham, Assistant Professor of Transportation, Harvard University. Presented before the New York Railroad Club, April 18, 1913.

class, and even a fifth, or military class. Nominally there is but one class on most of the railways of the United States, but actually there are more. Passenger cars in Europe are divided into compartments, first class compartments usually seating four persons, with two to a seat; second class compartments, six, with three to a seat; and third class compartments, eight to ten, with four or more to a seat. The first class services in England, France and Germany are about equal in quality, and correspond to the parlor car service in the United States. The second class services in those countries correspond to and about equal our good day coach service. There is, however, little difference between the first and second class compartments in Europe, except in the quality of the seat covering and in the number of passengers per compartment. The seats are of equal length, about six feet. In first class compartments, therefore, each passenger has about three feet of seat space, and in second class about two feet. While second class service is rendered on most of the railways of Europe, it is not rendered on a good many of those of England and not at all on those of Scotland. This is due to the fact that the Midland Railway some years ago abolished its second class service and made its third class service practically as good as its second class had been; and competition forced several other railways in England and all of those in Scotland to follow the example set. The consequence is that the third class service of the British roads probably is the best in Europe. The third class service in Europe generally is distinctly inferior to any service to be found on the railways of the United States. "The seats in third class cars (in Prussia) are not upholstered. With four passengers per seat, all occupants are crowded. We have nothing that compares with fourth class. . . . A traveler who wishes to economize, may ride third class for short distances without

much discomfort if the train is not crowded, but he must be in hard straits, indeed, to economize by riding in the fourth class cars."¹⁴ As already indicated elsewhere, the fourth class compartments in Prussia are usually overcrowded, most of their occupants being obliged to stand. Despite the relative discomforts of the third class service, and the very marked discomforts of the fourth class, 43.66 per cent. of all the passengers carried in Prussia travel third class and 45.51 per cent., fourth class. Only 9.66 per cent. travel second class, and only .14 of one per cent., first class; while 1.03 per cent. travel in the military class. That 89 per cent. of the passengers in Prussia travel third and fourth class largely accounts for the facts, that the Prussian lines carried 87 passengers per train in 1910, as compared with 63 in United States Group II and 56 in the entire United States, and that the average revenue per passenger per mile in that country is very low. Throughout the rest of Europe, a large majority of passengers travel third class. In the United Kingdom over two per cent. travel first class; less than 2 per cent., second class, and 96 per cent., third class.

The sleeping cars of Europe, like the day coaches, are divided into compartments, each containing an upper and a lower berth. Ordinarily sleeping car service is provided only for holders of first and second class tickets, the second class sleeping car service corresponding to our tourist service. Many Europeans criticise the open day coaches of the railways of the United States and Canada for lack of privacy, and our open sleeping cars for downright "indecenty." It is a question whether there is not more privacy in an American day coach, or parlor car, than in a European compartment in which there are put

¹⁴ "The Administration of the State Railways of Prussia-Hesse," by W. J. Cunningham.

from four to eight, or even more, persons who must sit directly facing each other. But there unquestionably is more privacy and "decency" in the European than in the American sleeping car. However, the traveler in this country who is willing to pay the price—a high one—can usually get a drawing-room or a compartment, the privacy, convenience and luxury of which exceed those of any accommodation that can be secured in Europe.

The dining-car service of the Prussian State railways is the best in Europe, while the sleeping-car service of the English roads is the best. Meals are usually served *table d'hôte* on European trains, and travelers agree that in proportion to their cost they are much better than the *à la carte* meals served on most of the railways of the United States and Canada.

The facts regarding the quality of the passenger, as well as the freight, service rendered by typical systems of state and private railways do not support the argument often advanced that state ownership tends to improve the quality of the service rendered to the public. Under fairly comparable conditions, the passenger service of private railways will easily stand the test of detailed comparison with that of state railways.

CHAPTER XII

SAFETY OF SERVICE

ADÉQUACY, speed, regularity and other qualities of railway service are important; but the most important is safety. In this quality the service of the railways of the United States is seriously deficient. Their bad accident record is occasionally contrasted with the good record of some State railway systems, and the inference is drawn that government ownership here would increase safety. The main causes of railway accidents are, plant failures; plant-and-man failures; man failures—including under this head the failures of officers and employés to develop and carry out safe operating methods and rules; and trespassing on railway property.¹ Whatever policy is best adapted to remove these causes is best adapted to reduce accidents.

The safety of the railway plant depends on the inventive genius and engineering skill used in developing it, and on the expenditure devoted to making and keeping it strong and reliable. It is a salient fact that the automatic coupler, the air brake, the block signal—especially the automatic block signal—the steel car, and most other devices to increase the safety of railways have been introduced by private companies. And it is notable that “nowhere in the world have appliances for safeguarding

¹ For a discussion of the causes of and remedies for railway accidents in the United States, see the author's article entitled “Wanted: A Commission on Railroad Accidents,” in the *Atlantic Monthly* for July, 1913.

railroad transportation been so highly developed as in this country, notwithstanding which nowhere in the world is there a greater proportionate number of accidents of the kind which such advance in the art should prevent.”²

The inventive genius and engineering skill which have developed so many safety appliances in this country have failed to produce their maximum possible effect largely because it costs a great deal to provide all the facilities and equipment needful for safety, and the traffic and earnings of most of our railways have been comparatively small. Doubtless the capitalizations of the railways of different countries roughly indicate the amounts that have been invested in them; and the average capitalization per mile of our railways is but little over one-half as much as that of the railways of all Europe, is only somewhat over one-half as much as that of the railways of Germany and is less than a fourth as much as that of the railways of the United Kingdom. The relatively small traffic and earnings of most of our railways have been due in most cases to the fact that they have been built into thinly populated and relatively undeveloped territories. One of their marked physical shortcomings is the great preponderance of single track. Another is the absence of block signals from over two-thirds of their total mileage. Another is the presence of numerous crossings with highways at grade. Still another is much track which is almost unballasted, is laid with light rail and is otherwise too weak to bear the heavy equipment used on it. “The general answer for most railroads is the expense involved. Money is not available with which to provide and install the apparatus (requisite for safety); it is needed elsewhere. A railroad officer

² The quotation is from the Third Annual Report of the Block Signal and Train Control Board of the Interstate Commerce Commission, p. 26.

responsible for results does his utmost to meet the demands made on him. His first responsibility, as he sees it, is to provide earnings. He knows that if he fails in this, someone will be found to replace him. It is but natural, therefore, that the railroad officer has in the struggle for existence given chief attention to the conditions directly affecting the financial end of the business, and less attention to the conditions affecting safety."³ The net earnings which the American railway officer has sought are really prerequisite under private ownership to the provision of safe facilities; for the capital that must be invested in such facilities cannot be raised unless earnings are sufficient to pay a return on it.

Experience in this and other countries does not indicate that under government ownership in this country increased initiative and skill would be shown in developing safety appliances. Under government as under private ownership, the provision of the facilities requisite for safety would involve large expenditures; and whether under government ownership, the means for providing them would be available would depend on whether the public would let rates be made high enough to produce the necessary earnings, or, in lieu of that, would let taxes be levied to supplement the earnings. The evidence does not show that, under similar conditions, the physical plants of railways owned by governments are ordinarily built, equipped or maintained better than those of private railways. The private railways of the United Kingdom have a larger proportion of double track than the state railways of Germany, are more strongly built, and are as well equipped and maintained. The private railways of France are hardly equal in these respects to the Prussian roads, but

³ From the Final Report of the Block Signal and Train Control Board of the Interstate Commerce Commission, June 29, 1912, p. 21.

are superior to the state railways of France and of most other countries of Continental Europe.

Accidents due to man failures are more numerous in proportion on the railways of the United States than accidents due to plant failures. They are so numerous because many of the managements are not careful enough in selecting and training employes and strict enough in enforcing discipline, and because many employes are carelessly prone to disregard the rules of safe operation, even when grounded in them. It is because of these things that even on railways which have spent large sums to make their track and equipment safe, bad accidents occur with discouraging frequency.⁴ An English authority who investigated the railway accident situation in this country, summed up his observations with the statements, "In the author's opinion the real reason for so many accidents is the inherent love of the American to take chances and his little respect for discipline and rule. It will be a difficult

⁴ "The most disquieting and perplexing feature of the problem of accident prevention is the large proportion of train accidents caused by the dereliction of duty by the employes involved. By far the greatest number of our serious train accidents are due to the failure of some responsible employe to perform an essential duty at a critical moment. The seriousness of this problem is indicated by the fact that of the 81 accidents investigated (by the Interstate Commerce Commission) up to September 1 (1912), fifty-two, or more than 63 per cent. of the whole number, were caused by mistakes on the part of employes. These fifty-two accidents comprise 48 of the 49 collisions investigated and four of the 31 derailments. Of the 48 collisions caused by the errors of employes thirty-three occurred on trains operated under the train order system and fifteen occurred under the block system. The most numerous failures were by trainmen and engineers. These were disobedience of orders, disobedience of signals, failure to keep clear of superior trains, improper flagging, and failure to control speed at dangerous points." From the Annual Report of the Interstate Commerce Commission for 1912.

task to eradicate this, which is a trait to be found in every walk of (American) life. Another cause is the carelessness over his own life."⁵ As this writer intimates, carelessness and recklessness are national traits; and our railway accidents are not so much a disease as merely a symptom of a disease with which every class in America is infected, and which manifests itself in many ways. It manifests itself in the existence of the conditions which make us notorious for accidents in all our industrial pursuits; and the spirit which causes reckless running of locomotives is not intrinsically different from that which causes the reckless driving of automobiles in our streets that results in scores of people being killed and injured daily.⁶ It is significant that of the 2,920 railway employes killed in connection with train operation in 1912, 2,315 were killed while coupling or uncoupling cars, although the automatic coupler, almost unknown in Europe, has been generally introduced here; by falling from engines or cars; while getting on and off cars or engines; by being struck or run over by engines or cars at stations or yards; and by being struck or run over by engines or cars at other places. It is also significant that of the 318 passengers killed, 166, or a majority, met their deaths by falling from engines or cars; while getting off engines or cars; and by being struck or run over by engines or cars at stations or yards. One difficulty the managements of American railways encounter in dealing with accidents is the resistance offered by the labor brotherhoods to the disciplining of employes; and the governments do nothing

⁵ "The Safety of British Railways," by H. Raynar Wilson; chapter on "American Railway Accidents," p. 235.

⁶ The number of passengers killed in all train accidents in the United States in the year ended June 30, 1913, was 139; the number of persons killed in the streets of New York City alone by automobiles in the calendar year 1912 was 221.

to strengthen the hands of the managements. The Prussian State, with its military régime, is, as might be expected, rigorous in punishing infractions of railway rules. "Guilty employes are not only reprimanded, suspended, fined, or dismissed, but in flagrant cases they are imprisoned. In 1910 there were 132 cases of criminal prosecutions, and 81 employes were given court sentences. For instance, an engineer who disregarded the signals and caused a collision and fatal injury was tried for criminal negligence, convicted, and sentenced to 15 months' imprisonment."⁷ Likewise, in England the operating rules of the private railways, when approved by the Board of Trade, become the law of the land, and any employe who violates them is subject to fine and imprisonment.

Whether under either state or private management regulations and laws to promote railway safety will be strict in their terms, and will be enforced, will always depend less on the railway economic policy followed than on the general temper of the people and the government of the country. There are fewer instances of misconduct causing railway accidents in Germany and England, and more instances of exemplary punishment, than in the United States, for much the same reasons that there are fewer cases of infractions of the laws in general and a larger proportion of punishments for them there than here. American democracy has the vices of its virtues. The individual has more freedom of action here than in most other countries; and while this freedom of action is in itself a blessing, and is often utilized for the highest social purposes, not infrequently it is abused to the social detriment. In no other vocation is it more necessary than in that of the railway employe that individual freedom of action shall

⁷ "The Administration of the State Railways of Prussia-Hesse," by Professor W. J. Cunningham.

be completely subordinated to the rules of safe action. It is because so many American railway employ  s do not implicitly obey these rules that so many man-failure accidents occur on our railways; and under government, as well as under private ownership, only by the stern repression of the liberty that becomes license could man-failure accidents be reduced.

A striking illustration of the tendency of the American people to act in disregard of their own safety, and of our governments to fail to intervene to save them from themselves, is the fact that of the 10,585 persons killed on our railways in the year ended June 30, 1912, 5,434 were trespassers on tracks, trains and yards. Experience here and abroad shows that only the passage and enforcement of suitable laws will stop railway trespassing; yet in this country where such trespassing is the most prevalent, there is no national law on the subject, and there are only six state laws.⁸ Legislation regarding railway trespassing is merely one form of legislation to promote public order and safety. It has been passed and enforced in Europe under both public and private ownership of railways; and it probably will not be passed and enforced under either policy in this country until our people and governments become more earnest and zealous in desiring and striving for public order and safety.

If the government acquired the railways, it would have brought home to it very forcibly the causes of most railway accidents. It could, if it chose, discipline employ  s much more rigorously than the railway companies can; but whether it would deal thus with citizens belonging to a very large body of voters seems rather questionable.

The conclusion indicated is that government ownership

⁸ In New York, New Hampshire, Maine, New Jersey, Massachusetts and Rhode Island.

probably would not tend, on the whole, to increase the safety of transportation in the United States. But if we should find that railways owned and operated by governments are usually safer than those owned by private companies, this would suggest an opposite conclusion. It is desirable, therefore, to compare the accident statistics of some state and private railways. There is great difficulty in making satisfactory comparisons between the accident statistics of railways in different countries. This is especially true of statistics of injuries. Injuries are reported on the most widely varying bases,⁹ and therefore comparisons of the statistics of different countries regarding them are almost worthless. There are also variations between the bases on which fatalities are reported;¹⁰ and the only strictly comparable accident statistics are those for railways in the same country. However, the differences between the methods of reporting do not vitiate comparisons of the statistics of different countries regarding fatalities so much as those regarding injuries. There will, therefore, be given here some comparative statistics regarding fatalities to employ  s and passengers occurring in connec-

⁹ In the United States, for example, a reportable injury to an employ   is one which keeps him from duty more than three of the ten days immediately following the accident; in England one which incapacitates him for at least 14 days; and in France one which incapacitates him for at least 20 days. There are similar differences between the bases on which injuries to passengers are reported.

¹⁰ In the United States and Germany the decedent to be included among the "killed" must die within 24 hours after the accident; in England he will be included if his death becomes known to the government authorities before the annual accident report goes to press, which may be 15 months after the accident; while in France the returns include every one whose death is known to have resulted from a railway accident, no matter when the death occurs or is reported.

tion with train operation on various systems of state and private railways.¹¹

Table I gives the numbers of passengers killed in several countries, in the years mentioned, and also the numbers killed for 100,000,000 passengers carried one mile in most of these countries. In Italy, Victoria, New Zealand and the United Kingdom statistics are compiled showing the numbers of passengers carried, but not showing the distances that they are carried. Therefore, the table gives the numbers of passengers killed in these countries and the numbers killed in them for 100,000,000 passengers carried, regardless of the distances they were carried.

The statistics for the French railways in the table are not strictly comparable with those for other countries. They include only passengers killed in train accidents. A passenger killed in a collision, for example, is included because a collision is an accident to a train, but a passenger killed by being struck by a train at a station is not included because while that is an accident to the passenger, it is not an accident to the train. Passengers killed in France in connection with train operation, but not in train accidents, are officially included under "other persons."^{11a} While the number of passengers killed in strictly train accidents on the French private lines in 1910 was only 5, on the Prussian-Hessian State lines it seems to have been only 2. The total passengers and "other persons" killed on the Prussian-Hessian State railways in 1912 — the

¹¹ The reader who desires to examine data regarding fatalities and injuries occurring in connection with train operation not only to passengers and employes, but also to other persons, will find more detailed statistics in Appendix B. The accident statistics given in the text are based on those in the appendix, and those in the appendix were kindly compiled at the request of the author by the Bureau of Railway Economics, Washington, D. C.

^{11a} See Appendix B.

latest year for which we have statistics — was 548, while on the French private railways it was 263. In proportion to the number of passengers carried and the number of train miles run, the record of the railways of the United Kingdom is extremely good. In 1908 they did not kill a pas-

TABLE I
PASSENGERS KILLED IN CONNECTION WITH TRAIN
OPERATION
STATE RAILWAYS

Country	Mileage	Year Ending	Total Passengers Killed	Passengers Killed for 100,000,000 passengers carried one mile
Denmark	1,217	Mar. 31, 1911....	1	.20
Sweden	2,717	Dec. 31, 1909....	2	.40
Belgium	2,691	Dec. 31, 1910....	11	.41
Germany—				
All State Railways	34,892	Mar. 31, 1912....	112	.48
Prussian-Hessian	23,587	Mar. 31, 1912....	71	.48
Austria	11,783	Dec. 31, 1910....	22	.60
Switzerland	1,705	Dec. 31, 1911....	12	.92
France ¹²	5,546	Dec. 31, 1910....	66	3.14
Italy	8,877	Dec. 31, 1909....	43	54.38
New Zealand ¹³ ..	2,742	Mar. 31, 1911....	7	62.50
Victoria	3,543	June 30, 1912....	9	8.63

¹² Casualties to passengers are those in train accidents only.

¹³ Includes casualties in train accidents only.

PRIVATE RAILWAYS

Country	Mileage	Year Ending	Total passengers killed	Passengers killed for 100,000,000 passengers carried one mile
Switzerland	1,238	Dec. 31, 1911....	00	.00
France ¹⁴	19,610	Dec. 31, 1910....	5	.06
Holland ¹⁵	2,293	Dec. 31, 1910....	3	.35
Austria	2,353	Dec. 31, 1910....	7	.70
Germany	2,216	Mar. 31, 1912....	3	.71
Sweden	5,735	Dec. 31, 1909....	3	.71
United States....	243,434	June 30, 1911....	356	1.07
Canada ¹⁶	25,406	June 30, 1911....	28	1.07
United Kingdom..	23,417	Dec. 31, 1911....	112	8.40

senger in a train accident, and in 1909 they killed only one. Probably, however, their record in this respect is no better than that of the German State railways.

Considering the statistics as a whole, there is some difficulty in deciding whether they indicate that state or private operation is the safer for passengers. The records

¹⁴ Casualties to passengers are those in train accidents only.

¹⁵ Includes railways owned by private companies and also state railways operated by private companies.

¹⁶ Includes 1,717 miles of state railways.

of the railways of the United States and Canada are bad compared with those of most other railways. But the record of the French State railways is much the worst of all. Comparing private and state railways in the same countries, it would seem that in Germany and Sweden, state operation is relatively safer for passengers, while in France, Austria and Switzerland, private operation is relatively safer for them.

The safety of railway operation to employés may be measured by the ratios between the numbers of employés killed in train accidents and the train mileages run, and by the ratios between the numbers killed and the total numbers employed. Table II makes comparisons on both these bases.

On the basis of the number of employés for one killed, as well as on the basis of the number of train miles run for one employé killed, the railways of the United Kingdom make a better showing for safety than the German State railways, and on the latter basis they make a better showing than any state railway system. The French private railways killed more employés in proportion to the number employéd than the German State lines, but fewer in proportion to the train miles run. Comparing private and government railways in the same countries, the private railways killed fewer employés in proportion to the total number of employés than the state lines in Austria, Switzerland, Sweden and France, while the reverse was the case in Germany and Belgium. In proportion to train miles run, the private railways of Switzerland, Sweden, Germany, Austria and France killed fewer employés than did the state railways in those countries, while in Belgium, the state railways made the better record. Employment on the railways of Canada and the United States is shown to be more hazardous than in any other country.

On the whole, the statistics cannot be interpreted as

TABLE II.
EMPLOYÉES KILLED IN CONNECTION WITH TRAIN
OPERATION
STATE RAILWAYS

Country	Mileage	Year Ending	Total Number Employés Killed	Number Employés Killed per 1,000,000 Train Miles	Number of Employés for One Killed
Austria	11,783	Dec. 31, 1910	93	1.0356	2,409
Denmark	1,217	Mar. 31, 1911	9	1.0521	1,449
New Zealand	2,742	Mar. 31, 1911	10	1.2283	1,288
Germany— All State Rail- ways	34,892	Mar. 31, 1912	554	1.2553	1,273
Prussian-Hessian	23,587	Mar. 31, 1912	411	1.293	1,227
Switzerland	1,705	Dec. 31, 1911	29	1.3728	1,214
Belgium	2,691	Dec. 31, 1910	71	1.5128	974
Sweden	2,717	Dec. 31, 1909	21	1.5289	1,188
France	5,546	Dec. 31, 1910	83	1.7032	855
Italy	8,875	Dec. 31, 1909	122	1.8475	1,227
Victoria	3,543	June 30, 1912	26	1.8791	

indicating that there is any relationship between the form of the ownership of railways, and the safety of their operation. They do suggest, however, that there may be a connection, where public ownership obtains, between safety and the form of the government. Probably it is not without significance that, in Europe the state railways in countries having "strong" governments make a better showing, on the whole, than those in countries having more democratic governments—that, for example, the state railways of Germany and Austria rank high in respect to safety, those of Switzerland relatively low, and those of France lowest of all.

TABLE II.
EMPLOYÉES KILLED IN CONNECTION WITH TRAIN
OPERATION
PRIVATE RAILWAYS

Country	Mileage	Year Ending	Total Number Employés Killed	Number Employés Killed per 1,000,000 Train Miles	Number of Employés for One Killed
Switzerland	1,238	Dec. 31, 1911..	2	.2611	3,269
Sweden	5,735	Dec. 31, 1909..	11	.6276	1,867
Germany	2,216	Mar. 31, 1912..	9	.7564	1,266
Austria	2,353	Dec. 31, 1910..	19	.8174	2,822
Holland	2,293	Dec. 31, 1910..	26	.9299	
United Kingdom	23,417	Dec. 31, 1911..	430	1.003	1,416
France	19,610	Dec. 31, 1910..	237	1.2355	1,131
Belgium	243	Dec. 31, 1910..	6	1.8025	786
Canada	25,400	June 30, 1911..	227 ¹⁷	2.4099	622
United States...	243,434	June 30, 1911..	3,163	2.4557	527

¹⁷ Includes 1,717 miles of government railways.

CHAPTER XIII

RATE-MAKING: GENERAL CONSIDERATIONS

THE making of rates is the most delicate and complex function, and one of the most important functions, of railway management. In leading countries everyone is more or less affected by the amount of railway charges and the way they are adjusted. The cost of passenger transportation is often a personal expense, as when people travel for health or pleasure. But even it is very commonly a commercial expense, for business men often charge it into their expense accounts, from which it passes into the costs and prices of goods and commercial services. The number who directly pay freight rates is much smaller than the number who directly pay passenger rates. But all pay freight rates, directly or indirectly. It is as impossible in a civilized community entirely to escape paying them, either directly or indirectly, as entirely to escape paying taxes, directly or indirectly.

The proposition has been advanced that railway rates actually are taxes. On this theory, the power to fix and collect rates is the power to tax. But the power to tax is an attribute of sovereignty and should not be delegated to private persons. Therefore, it has been concluded, the government should own and operate the railways.

The incidence of railway rates is often similar to that of taxes; but railway rates are not taxes. A tax is an enforced contribution levied by government on persons, property or income for general governmental purposes. It is not levied for the rendering of any specific service;

and it detracts from the value of property on which it is imposed. A railway rate is a charge for a specific service rendered at the voluntary instance of the person receiving it; and in the case of freight carriage the service charged for adds value to the commodities carried. The fundamental principle of equity in taxation is that each shall contribute to the support of the government according to his ability. Railway rates are always adjusted more or less according to a similar principle, "what the traffic will bear." But, as one of the leading economists of America has pointed out in a brilliant essay,¹ the production of railway transportation and the fixing of the rates for it are really an example of the operation of the familiar principle of economic joint cost. Such joint cost is found in every industry where several commodities are produced or services rendered with the same fixed investment.

In all such industries there are maximum and minimum economic limits to the prices or rates that can be charged for the various products if the total receipts are to cover the total expenses, including return on investment. But some industries having a joint cost are managed under highly competitive conditions, and the prices at which their products can be sold are determined by demand and supply. Others are monopolistic; and in them there is opportunity in fixing prices or rates to exercise sound and fair judgment, or arbitrary power. Many industries might under modern conditions get into the latter class. The railway is by its nature quasi-monopolistic. There is competition between groups of railways running through entirely different territories, but handling traffic originating at or moving to the same points, as between the rail-

¹ "A Contribution to the Theory of Railway Rates," by Frank W. Taussig. *Quarterly Journal of Economics*, Vol. 5, 1891. Reprinted in W. Z. Ripley's "Railway Problems," p. 123.

ways of the United States running to the eastern seaboard, and those running to the Gulf of Mexico, for the Kansas and Nebraska grain traffic moving to the ports for export to Europe. This form of competition is permanent. There often has also been much competition in rates between parallel railways running between the same points. But this always tends to disappear. Finally, each railway serves communities reached by no other line; and as to these it is largely a monopoly. As competition in rates declines or disappears, the opportunity for the managers of private railways to exercise the power of monopoly in adjusting the relations between rates and in fixing their amounts increases. The unfair discriminations that usually occur when active competition in rates prevails, and the power of quasi-monopoly that managers of private railways get as competition diminishes, require, for the protection of the public, that rates shall be made, or that the making of them shall be controlled, by governmental authority. Recognizing this principle, is it expedient, because of the nature of railway rates, for the public not merely to regulate and control them when made by private railways, but to go farther and take to itself the ownership and management of railways, including the entire making of rates?

It is sometimes said that there is a fundamental difference between the way that rates can and ought to be made and regulated under private ownership, and the way that they can and ought to be made under public ownership. Under either the end sought should be the promotion of the greatest good of the greatest number. Only on the ground that it promotes this end can any institution or policy be validly advocated or defended. Under either private or public management the greatest good of the greatest number will be best promoted by so fixing rates that they will be equitable as between individuals and communities,

adapted to cause the greatest development of commerce and industry, and as low as is reasonably practicable. What is equitable between persons and communities cannot be different under the two policies. Nor can the adjustment of rates which would cause the greatest development of commerce and industry under the one policy be different from that which would cause it under the other. What must be meant, then — and what usually is meant — is that under public ownership the government can and should fix rates on a different general level from that on which private companies can afford or be equitably required to fix them. Railways are run by private companies to make profits, and they will not be built and developed by private companies without the belief that in the long run their profits will be satisfactory. Therefore, it is reasoned, rates must be high enough under private ownership to return a profit on the investment. State railways do not need to earn profits. If their earnings are not sufficient to cover working expenses and interest, the government can and will make good the deficiency from taxes. Low rates further the public welfare; and, it is contended, rates should be made low, even if in order to do so it is necessary to cause a deficit in railway earnings and make it good by taxation. Therefore, it is concluded, the government, which alone exercises the taxing power, should own and operate the railways so that it may freely make rates as low as the public interest demands.

The conclusion in favor of government ownership does not necessarily follow from this reasoning. It is true that it is desirable that rates shall be low. But it is more important that the total cost of transportation shall be low. The total cost includes all the expenses incurred, whether paid entirely from rates, or partly from rates, and partly from taxes. If it be considered desirable to make the

rates less than enough to cover the total cost this can be done, under government ownership, by fixing the rates at the desired level and imposing taxes to pay the resulting deficit of the government roads, or, under private ownership, by fixing the rates at the desired level and meeting with subsidies raised by public taxation the resulting deficit of the private roads. Both of these policies have been followed in different countries; at different times in the same countries; and sometimes simultaneously in the same countries. Assuming rates fixed at any given non-compensatory level, if the operating expenses and interest under government ownership will be less than the operating expenses and necessary return to bondholders and stockholders under private ownership, then the amount of taxes that will have to be raised to pay the deficit will be less under government ownership, and, other things being equal, government ownership will be preferable. If the operating expenses and necessary return on investment will be less under private than under public ownership, then the amount of taxes that will have to be raised to pay the deficit will be less under private ownership, and, other things being equal, private ownership will be preferable.

It follows that the argument that under government ownership rates can and ought to be made differently from what they can and ought to be made under private ownership is not based on sound grounds, and that the conclusion in favor of government ownership drawn from it is invalid. There are three questions to be considered in this connection. First, under which policy will the total economic cost of transportation be the less? Second, recognizing the fact that rates may be made equally low under either policy, under which will they probably be made the lower? Third, is it expedient under either private or government ownership, to use subsidies raised by taxa-

tion to make rates lower than they otherwise would or could be made?

As to the first question, the conclusion has been reached in an earlier part of this work, that, ordinarily, the total economic cost of transportation is less under private than under public management. If private railways were encouraged to rely on public subsidies to make good all deficits in their net earnings the incentive to efficient management might be little or no greater than under state ownership. But where, as in Canada, the subsidy is definitely limited in one way or another, and a railway can profit by the increased net earnings resulting from more economical operation, the incentive to efficiency is not impaired. It is of primary importance that the total economic cost of transportation shall be made as low as is compatible with good service. For, while the total cost may be paid wholly in the form of passenger and freight rates, or partly in the form of rates and partly in the form of taxes, in the long run it must all be paid, and in whatever form it is paid it is a burden on the people, the industry and the commerce of the country which they cannot escape. Rates may be made as low as the people, through their government, may decree; but, the total economic cost of transportation, all of which the public must pay in one form or another, depends on the way the railways are managed, and can be kept as low as is practicable only by the most economical management practicable. Whether rates probably will be lower under state or private management, and the expediency of operating railways at a loss in order to secure low rates, and paying the deficit from taxes, will be discussed in subsequent chapters.²

Since the great ends that should be sought in rate-making are the same, regardless of the ownership of the

² See pp. 287 and 309.

railways, the principles on which rates ought to be based under either policy must be the same.³ In fact, there are but two main principles on which they ever should be, or for any considerable period or territory ever have been, based. These are (1) the cost of the service, and (2) the value of the service, or "what the traffic will bear."

It is sometimes said that all rates ought to be, or that certain rates are, based solely on the cost of the service. But it is not possible to ascertain exactly the cost of any railway service; for none of the fixed charges and few of the operating expenses can be assigned, except rather arbitrarily, to the various services. Even if the various costs could be ascertained they would be found to fluctuate violently from year to year, from month to month, and even from day to day, and on the various parts of every railway. For freight traffic may be twice as heavy in March as in August. It may be much heavier on October 31 than on October 1. It is much heavier on main lines than on branch lines. Now, the heavier the traffic is the less, other things being equal, is the cost of handling each unit of it. Therefore, to base rates on actual cost would be to make them different in August from what they were in March, on October 31 from what they were on October 1, and on every minute part of a railway from what they were on every other part. The costs of handling traffic would be found to bear very little relation to what it could afford to pay, and, therefore, the rates would be adjusted without any relation to what the traffic could afford to pay.

³ The general subject of rate-making has been discussed in many works, including Hadley's "Railroad Transportation," Acworth's "Elements of Railway Economics," Noyes' "American Railroad Rates," and Ripley's "Railroads: Rates and Regulations." See also the author's "The American Transportation Question" (D. Appleton & Co.), and especially the first six chapters.

Sometimes "cost of service" is used in the sense of average cost. But average costs fluctuate as widely from month to month and week to week, and differ as much on all the various parts of a railway, as actual costs, and have even less relation to what the traffic will bear. Clearly it would be inequitable and impracticable to base rates on average cost.

A third meaning given to cost of service is what the handling of certain traffic will add to all of the expenses which will have to be incurred whether this particular increment of traffic be handled or not. Many rates are based on "additional," or "out-of-pocket," expense, as it is called. But all rates cannot be based on it. Suppose it is necessary for a railway to earn an average of eight mills per ton mile on all of its traffic in order to pay all of its operating expenses and charges. If certain new traffic will add three mills per ton mile to its expenses and the railway can get four mills for hauling it, it can make a profit by taking it. But if its average rate were reduced to four mills per ton mile it would be bankrupted.

While the cost of service is never accurately ascertainable, the railway manager knows that ordinarily it costs more to haul a given tonnage of one commodity, as feathers, than of another commodity, as coal; and that ordinarily it costs more to move goods a long distance than a short one; and by engineering and accounting investigations he can approximate the costs of carrying different commodities and of carrying them different distances. When the railway manager has this information, how he will adjust rates will depend on the relative amounts of weight he attaches to the cost of the service and the value of the service. Additional cost—"out-of-pocket" expense—fixes the minimum below which rates cannot be reduced without causing an actual reduction of net earnings. The

most the traffic can bear fixes the maximum rate that can be charged.

The ways in which the fundamental principles of rate-making are applied in fixing the relations between the rates on different commodities are somewhat similar in all countries. For example, in the United States, under private ownership, coal is often hauled for $2\frac{1}{2}$ to 4 mills per ton mile, while first class rates vary from $1\frac{1}{4}$ to 4 cents per ton mile; and in New South Wales, under government ownership, the average earnings per ton mile on coal, coke and shale, in the year ended June 30, 1912, were 9.6 mills, while on second class commodities they were 7.14 cents. As to the rates on the same commodities moving different distances, in all countries, whether under private or public ownership, they ordinarily increase with distance, which is a rough measure of cost. While, however, the general principles according to which rates are, and, to a great extent, must be, made are the same under government and private ownership, there are some important differences between the machinery used for making rates, and the ways in which the principles of rate-making are pretty sure to be, and generally are, applied, under the two policies.

In the early history of private railways in most countries their traffic managers, in making rates, usually acted independently. Competition was active and general, and the traffic manager of each road sought to attract business from other roads by making lower rates than his rivals. This reduced railway earnings so fast, and led to so many unfair and troublesome discriminations, that the managements interfered to bring about some concert of action. The governments also extended their control over rate-making to stop the unjust discriminations. Consequently, even in countries where the managers of private railways still have much freedom of action a relatively small part

of the rates of each road are now made independently by its traffic department. There are railway associations by which commodities are classified for large groups of railways or for those of an entire country. Through similar associations many of the rates themselves are made. In the United States there are three territorial classifications which have been made and are modified from time to time by what are known as the Official, the Southern and the Western Classification Committees. There is also a Uniform Classification Committee, which is working to bring about uniformity of classification throughout the country. In the United Kingdom there is one uniform classification.

In practically all countries where private ownership obtains there are also commissions to which shippers or communities may make complaints regarding the rates charged them. In the United States rates are regulated by many state commissions and by the Interstate Commerce Commission, in Canada by the Railway Commission, and in the United Kingdom by the Railway and Canal Commission.

While in these countries government regulation and the various railway associations restrict the freedom of action of the traffic managers of the various private railways, they do not destroy it. In the United States laws and commissions usually fix only maximum rates, leaving the railways free to make any reduction they like. The same is true in England. While the traffic manager of a private railway may be subjected by his fellow traffic managers to much pressure to prevent him from making changes in rates of which they disapprove, this seldom is successful when he is convinced that the changes will benefit his railway and the territory it serves.

The country which earliest adopted stringent regulation of private railways was France. There the proposal of a

rate must originate with one of the companies, but before taking effect it must be approved by the Minister of Public Works. When a railway desires to put a new rate into effect it must submit it to the Prefects of the Departments and to the Chambers of Commerce of the districts affected, to the Director of Commercial Supervision, and to the Minister of Public Works. The Prefects and Chambers of Commerce forward to the Minister any protests or comments they wish to make. The Director of Commercial Supervision has the proposal investigated by the General Supervisor of Commercial Exploitation who has charge of such work in respect of the particular railway proposing the rate. A written report is prepared which is submitted to the Director of Commercial Supervision, who in turn transmits it, with or without revision, to the Minister of Public Works. The Minister then lays the document before the Consultative Committee of Railways. This is a body created to investigate rate matters as well as questions affecting the relations between the railway companies and the State. It is composed of about 150 members, including high officers of state and representatives of agriculture, commerce and industry and a number of senators and deputies; and its principal work is done by a permanent committee of 68 chosen from among its members. If the Consultative Committee makes a favorable report the Minister usually approves the rate. Needless to say, the difficulties of getting changes in rates are much greater in France than in England, Canada or the United States.

There is a great similarity between the machinery for dealing with rates in France, where private ownership preponderates, and in European countries where government ownership prevails. The fixing of rates is always in the hands of the state railway administrations; but advisory councils have been created in the various German states,

in Austria-Hungary and in Italy to advise with the railway administrations on rate and other matters.

In Prussia there is a General Advisory Council and nine District Councils. These are composed of public and railway officials and representatives of the agricultural, industrial, commercial and forestry interests. The General Council is presided over by the Minister of Public Works; the District Councils, by the presidents of the various State Railway Directions. All the members of the District Councils and three-fourths of those of the General Council are chosen voluntarily by the various business interests. The rest of the members of the General Council are appointed by the Minister. The railway authorities prepare the dockets for the meetings of the councils, although their members are at liberty to bring up matters not suggested by the railway authorities. The District Councils deal only with matters of local interest; and all matters of more than local interest must be submitted to the General Advisory Council. The organizations of the advisory councils in the other German states and in Austria-Hungary and Italy are similar.

The foregoing regarding the machinery for making rates under government and private ownership suggests the probability that ordinarily there is likely to be more difficulty in getting changes of rates made under public than under private ownership, except in France. Let us now see how rates are likely to be adjusted under the two policies.

CHAPTER XIV

RATE-MAKING: THE ADJUSTMENT OF RATES

THE adjustment of rates is a process of discrimination. This discrimination, while necessary, may be fair and beneficial, or unfair and harmful. Those concerned in the way that rates are adjusted are the owners of the railways—whether private stockholders or the public—those who travel and ship goods, and the general consuming public. In considering the propriety of any particular adjustment the way it affects all these classes should be considered.

The most fundamental difference between kinds of traffic is that between passengers and freight. The units of passenger and freight traffic are one passenger carried one mile—the “passenger mile”—and one ton carried one mile—the “ton mile.” The way passenger and freight rates should be fixed with relation to each other has been stated clearly and vigorously by the Railroad Commission of Wisconsin: “We are not concerned about what our right might be to reduce the passenger rates to a point where passengers were being carried at a loss and to recoup such loss by a species of piracy practiced upon the shippers of freight. The two classes of service, though carried on by the same agency, are entirely separate and distinct. From the standpoint of equity there is no justification for making the passenger contribute toward the cost of carrying freight. No more is there any justification for compelling the shipper of freight to contribute to the cost of carrying passengers. The imposition of a tax upon the users of one class of service for the benefit of

those who use another is not consonant with reason or fair dealing.

“But if we wholly disregard equitable considerations between individuals and take into account the benefit that might accrue to the state from imposing a burden on the few for the benefit of the many we arrive at the same result. We believe that not one good economic reason can be urged in favor of making the shipper bear a portion of the carrying cost of the passenger. Low freight rates are vastly more important to the people of the state than low passenger fares. While it is true that the number of travelers greatly exceeds the number of shippers of freight, it is not true that there are as many people who are really affected by passenger as by freight rates. The passenger rate is brought sharply to our attention because it is a direct tax. The freight rate is, in reality, an indirect tax, sometimes paid by the producer, more frequently by the consumer. . . . The freight is actually paid by the consumer of the coal. He may be a nabob and able to stand it, or he may be supporting a family on an earning of \$2 per day. Because the freight is collected through the coal dealer as part of the lump price that is made this particular item attracts no attention. If, however, it is excessive it may be more important that it be reduced to a proper level than that the consumer should have the privilege of riding at 2 cents a mile. He must use the coal. He may not want to ride, even at 2 cents a mile.”¹

Passenger transportation is often as much a necessity as freight transportation. But the proportion of goods shipped for purposes of pleasure and luxury is extremely small compared with the amount of traveling done for like

¹ Buell versus Chicago, Milwaukee & St. Paul. Decided in 1907 when the commission reduced the maximum passenger fare in Wisconsin from 3 to 2½ cents per mile.

purposes. Besides, in every country a relatively small part of the people, composed chiefly of the more prosperous, does a great part of the traveling, while the great majority of the commodities carried into whose price the freight rate enters more or less is consumed directly or indirectly by that very large majority of the people having only small or moderate means. Therefore, low freight rates tend more to reduce the cost of living of the masses than low passenger rates. Low freight rates also tend to reduce the cost of doing business and to promote commerce and industry; and the greater the development of commerce and industry the greater becomes the prosperity of a country and its people. If passenger rates be made unreasonably low this must be offset either by charging relatively high freight rates or by levying taxes on the general public to make up a railway deficit, either of which imposes a burden on commerce and industry. It follows, as the Wisconsin Commission says, that on principles both of equity and economics passenger traffic should, if it can, bear high enough rates to pay its full share of operating expenses and fixed charges.

Numerous and relatively expensive stations must be provided for passengers. The speed of passenger trains must be greater than that of freight trains. The cost of passenger equipment is relatively higher than that of freight equipment. On the other hand, the labor cost of running a passenger train a given distance normally is substantially smaller than that of running a freight train an equal distance. It is impossible accurately to apportion expenses between passenger and freight traffic; but probably on the average the direct costs of moving a passenger train one mile are not far from two-thirds as great as those of running a freight train one mile. Now, usually the number of tons per train is much larger than the number of passengers per train. The passengers and tons

hailed per train in a number of countries are as follows:

	Average passengers per train mile	Average tons per train mile
Prussia-Hesse (1910)	87	236
United States (1910)	56	380
United States Group II (1910)	63	502
New South Wales (1912)	121	90
Canada (1912)	62	325
France (1908)	65	177

The cost of running a passenger train being, perhaps, two-thirds as great as that of running a freight train, and the number of passengers per train being ordinarily only from one-third to one-sixth as great as the number of tons per train, it must follow that generally the cost of hauling one passenger one mile is much greater than the cost of hauling one ton one mile. Therefore, on the sound principles stated by the Wisconsin Commission the average rate per passenger mile should ordinarily be higher than the average rate per ton mile.

Private railways usually do make their passenger rates as high as, or higher than, their freight rates. State railways usually do the opposite. These tendencies are illustrated by the data in the table on page 258.

The data on the subject demonstrate that on most state railways the passenger traffic does not pay anywhere near the part of the operating expenses and fixed charges properly chargeable to it.²

² "The large surplus which is turned over to the (Prussian) State each year certainly is not made from the transportation of passen-

STATE RAILWAYS

	Average rate per passenger mile, cents	Average rate per ton mile, cents
Prussia-Hesse (1910) .....	.884	1.248
New South Wales (1912)	1.04	1.78
Belgium (1910) .....	.739	1.309
Switzerland (1910)	1.29	3.01
Denmark (1909)	1.13	2.14
Intercolonial Ry. (Canada)		
(1911)	1.66	.582
France (State Railways) (1910)	1.03 to 1.07	1.55 to 1.60
Japan (1909) .....	.746	.676

PRIVATE RAILWAYS

	Average rate per passenger mile, cents	Average rate per ton mile, cents
United States (1910)	1.94	.753
All Canadian Roads (1912)	1.94	.757
Argentina (1909)	1.91	1.59
French Private Roads (1910)...	1.11 to 1.25	1.18 to 1.46
Holland (1909)	1.48	1.42
United Kingdom ^a	1.75	2

^a Estimated.

Why state railways favor passenger traffic at the expense of freight traffic is not hard to understand. As the Wisconsin Commission said, the passenger rate is analogous to a direct tax, the freight rate to an indirect tax. A great majority of the people are affected more constantly and to a greater extent by freight rates than by passenger rates. But as they more frequently pay passenger rates directly they more frequently feel them directly. Therefore, low passenger rates are apt to be more popular than low freight rates. State railway managements are more disposed to cultivate popularity than private railway managements, and one means by which they do so is by making passenger rates relatively lower than freight rates. So far as they thus gain popularity it is secured at the cost of the real welfare of the public.

The fixing of the proper relations between freight rates is a most complex and invidious task, requiring the greatest expertness, and the greatest impartiality as between shippers and communities. The requisite expertness demands encyclopedic knowledge of the conditions under which commodities are produced, carried and marketed. W. M. Acworth, the English economist, concludes that the traffic manager of a state railway is as likely to have the requisite expertness as the traffic manager of a private railway, but is less likely to be impartial.⁴

Expertness in any line is acquired largely in proportion to the incentives for acquiring it. Whether a railway will get to handle any given traffic, or, if so, will handle it at a profit, will depend on the rates made. This is especially

gers. It must come from freight. Freight shippers by rail, therefore, are being indirectly taxed for the benefit of the state at large." "The Administration of the State Railways of Prussia-Hesse," by Prof. W. J. Cunningham. Proceedings of the New York Railroad Club, May, 1913.

⁴ "Studies in Railway Economics," *Railway Age Gazette*, Jan. 13, 1911, p. 75.

true under competitive conditions; and the management of a private railway usually has the stimulus of competition. The tenure of the officers of private railways depends chiefly, that of the officers of government railways to a much smaller degree, on the earning of profits. It would seem, therefore, that expertness in so making rates as to develop the largest attainable traffic is more apt to be characteristic of the managers of private than of state railways.

As to impartiality, human nature is such that how much of it men will show also depends largely on their incentives. And the incentives of the managers of private and state railways to be impartial are not the same. The rate-maker, under either state or private management, is an arbiter between contending and competing shippers and communities. Ordinarily, under either private or public management, he has no interest in the business of either the shippers or the communities that his railway serves. When this is the case he will be disposed to make rates according to sound principles, for by so doing he will in the long run develop the maximum traffic and earnings.

Under both private and public ownership, however, the railway manager is subject to influences that tend to interfere with action by him according to his best judgment. Sometimes under private ownership in the United States, and in other countries also, capitalists largely interested in industrial concerns have owned stock in and had more or less influence over the managements of railways over which the industrial concerns have shipped. In other cases railways or railway officers have owned coal mines or other industrial properties. In these circumstances the influence exerted to cause the rates of some shippers to be made unduly low as compared with those of others often has been strong, persistent and effective. Discriminations are

much less likely to be caused by such conditions under state ownership.

Again, under private ownership several, or even many, railways compete for the traffic of very large shippers. The shipper naturally gives his business to the road which directly or indirectly makes his charges for transportation least compared with those of other shippers. Under the pressure of competition numerous means of favoring one shipper as compared with another, and especially the large as compared with the small shippers, have been devised under private management in the United States. The commonest form of unfair discrimination in the past was secret rebating. The rapid growth of the great trusts in this country during the quarter of a century before the passage of the Elkins act in 1903 was due in no small measure to this practice. Or a large shipper may own a small railway which delivers consignments from his plant to the large railways; and he may be favored by allowing him an excessive part of the through rate. Or one shipper may be favored as compared with others by making the rate from his point of production to a large market so low compared with the rates of other shippers from other points of production to the same market as to give the former a practical monopoly of the market. Rebates may be paid in the form of excessive allowances for loss or damage of freight. All of these and many other forms of unfair discrimination have been practiced in the United States. Secret rebating has been almost abolished now, and most forms of unfair discrimination have been much reduced in this country within the last ten years; but there is still a good deal of unfair discrimination.

Unfair discrimination between persons does not seem to have prevailed to the same extent on other private railways as on those of the United States. But it was very prevalent on the railways of Germany before they were nation-

alized,⁵ and it has existed and still exists more or less on other private railways. Its usual cause is competition; and under government ownership this cause usually is eliminated. However, discriminations of a kind that are not tolerated in the United States are made on some government railways. On the Italian Railways "rebates do not exist to-day to the same extent as in the days of private enterprise, although they are not as yet entirely abolished."^{5a} The Italian State railways have a schedule of rebates graduated according to the quantities of goods shipped. If a shipper consigns 100 carloads in a year he gets a rebate of one-half of one per cent. of the total freight charges, and for each additional 100 carloads he gets an additional rebate of one-half of one per cent. Thus, on 400 carloads his rebate is 2 per cent. of the freight charges; on 800 carloads, 4 per cent.; on 1,000 carloads, 5 per cent. To get these rebates the shipper must comply with certain tariff conditions regarding loading and packing. Likewise, on the Hungarian State Railways reductions or refunds are made in the interest of those who ship specified minimum quantities within certain periods, these sometimes amounting to 50 per cent. Somewhat similar arrangements are made by the private railways of England. These arrangements are public and open to all, but any such arrangement by which only a few can benefit is a discrimination in their favor.

The only discrimination based on quantities shipped which is favored by the law and regulating authorities in the United States is between shipments in carloads and less-than-carloads. To get the carload rate, which is usually

⁵ "The Nationalization of Railways in Prussia," by Professor Hermann Schumacher; a paper read before the Royal Economic Society, London, Jan. 11, 1912.

^{5a} Board of Trade Report on Railways in Belgium, France and Italy, p. 252.

much less than the less-than-carload rate, the shipper must forward a minimum quantity specified in the classification or tariffs. These "minimum carload weights" vary according to the nature of the traffic and the rates applied. It is sometimes complained that the minimum weights are so high, and the differences between the carload and less-than-carload rates so great, as to work an unfair discrimination against the small shipper. In England lower rates are made for two-ton and four-ton lots than for goods moving in smaller quantities. On the German State railways lower rates are made for five-ton lots than for smaller shipments, and for ten-ton than for five-ton lots. The discrimination against the small shipper is less on the state railways of Germany than on those of the United States, but greater on the German lines than on those of England.

As a matter of public policy, there are two points to be considered. One is the discrimination between shippers; the other, the economy of railway operation. The larger are the consignments in which goods are shipped the less it costs per ton to handle them, and the lower are the rates that can be made. It is to the interest of the small shipper to have the amount that must be shipped in order to get a reduced rate small. It is to the interest of the large shipper to have the minimum weight made high, because, first, ordinarily the higher is the minimum weight the greater is the difference per ton between the rates for large shipments and small shipments, and second, the higher is the minimum the fewer are the shippers who can avail themselves of the lower rate. In this case the interest of the large shipper harmonizes with that of the railway, which gains by handling traffic economically, and also with that of the consuming public, which gains by having the cost of transportation made as low as practicable.

One of the loud complaints directed against the railways

of the United Kingdom is that they make lower rates on vegetables, fruits, dairy products and bacon imported from Denmark and other continental countries, and dressed meats from Argentina and the United States, than they do on the same kinds of traffic originating in the United Kingdom. This, it is said, is an unfair discrimination against the British shipper. The complaint is in the main unfounded. What British railways do is to provide in their tariffs for certain reductions in rates on such commodities as those mentioned when packed in specified ways and delivered to them in specified quantities. The truck growers, dairy men and other producers of Denmark and other continental countries have formed coöperative associations which combine and pack their products as required by the English tariffs. The large meat packers of the United States and Argentina also conform to the requirements, often shipping in trainloads. The same rates are open on the same conditions to the British producers, but, although repeatedly informed of this, they do not follow the example of their foreign competitors by meeting the tariff conditions. The situation of the Irish farmers is much the same. They complain that the rates of the railways exclude their butter, eggs, and other produce from the English market. The answer made is that the railways cannot — and could not if they were owned by the government — rationally or profitably make the Irish farmers as low rates as they give the Danish farmers until the Irish farmers adopt the methods of packing and consolidating shipments which make it practicable to handle shipments from Denmark economically.⁶

While, however, there are many unfounded complaints against private railways regarding unfair discrimination, there can be little question that the evil of unfair dis-

crimination between persons is more likely to prevail under private than under state management. This has been one of the worst evils of railway management in the United States, and public regulation has been necessary to reduce it to its present proportions in this country. Whether it can be as nearly abolished under private as under state management, even with the most stringent public regulation, is uncertain. The temptations to it must always under competitive conditions be great and the opportunities considerable.

Private railways operate under keenly competitive conditions, and it is chiefly for this reason that they are more likely than state railways to make discriminations between communities as well as between shippers that seem, or actually are, indefensible. Two or more railways may each have numerous points on their lines that are reached by no other railway, while all run between the same large terminals, as between St. Louis and Chicago, or Chicago and New York. In bidding for the traffic of these large competitive points they may make rates that are lower relatively both to the cost of the service and to what the traffic can reasonably bear than they make to intermediate non-competitive points. Such discrimination is less likely to occur under government ownership, especially where the government has a monopoly. Where, however, as in Belgium some thirty years ago, there has been active competition between government and private railways, experience has shown that the government roads have been apt to resort to the same kinds of discrimination to get business as the private roads. Under modern conditions where both private companies and the government own railways the government usually fixes minimum and maximum rates on the private railways and prohibits competition between them and the state railways. In this way palpably unjust discriminations between local communities usually

⁶ "Report of the Vice-Regal Commission on Irish Railways," p. 95.

are avoided. The conclusion here reached, therefore, is exactly the opposite of that reached by Mr. Acworth. It would seem that the traffic managers of private railways are more apt to be expert than those of state railways, but less apt to be impartial.

It is often contended that mileage is the only fair basis for fixing rates on commodities moving different distances, because distance is a rough measure of cost. Many railways, while using distance as one of the main bases of rate-making, depart from it in innumerable instances in order to adjust rates to what the traffic will bear. This is often done simply because if the rates for long distances were based on mileage the traffic could not move. But the most common cause of radical departures from the distance basis is competition, either between railways themselves, or between waterways and railways, or between producing centers or markets.

While departures from the distance basis in making rates may lead to unfair discriminations, there are few economists or railway experts who do not believe that there are many circumstances in which departures from that basis are justifiable. Even where the cost of service principle is strictly applied, while the total rate increases with distance, the average rate per ton mile usually is reduced as the distance increases. This is done partly because when both terminal and transportation expenses are considered the cost per mile is greater for short than for long hauls; but it is also based more or less on the principle of charging what the traffic will bear. Even on the German State railways, where the system of making rates on a strict mileage basis prevails more than elsewhere, the terminal charge per ton on piece goods sent by fast freight is 67 cents per ton when the goods move 31 miles, and 91 cents when they move 62 miles. Likewise, on goods in wagon load Class A 2 moving 50 miles the terminal charge

is 21.6 cents, while when they move 62 miles or more it is 29 cents. These terminal charges are obviously based, not on the cost of the service, but on what the traffic will bear.

Where state railways encounter the competition of the railways, waterways, markets or producing centers of other countries, they disregard distance in making rates as much as private railways. The present German State railway tariffs began with only three scales of rates, all on a mileage basis: (1) So much per ton mile for small consignments; (2) a lower rate per ton mile for 5-ton lots, i. e., half carloads; (3) a still lower rate per ton mile for 10-ton lots, i. e., full carloads. There were also terminal charges for each class. The modern German tariffs depart widely from the old basis. There are now two classes for small consignments, four for 5-ton lots, and five for 10-ton lots. The German railways have also made so many exceptional—"*ausnahme*"—tariffs that in 1906 only 35.68 per cent. of the total traffic of the Prussian State lines was carried on the normal mileage rates, while 64.32 per cent. was carried on "exceptional," or, as they would be called in the United States, "commodity" rates. It is believed that 70 per cent. of the traffic of the German State Railways is now carried on these exceptional rates.⁷ In the United States and the United Kingdom, under private ownership, commodity rates are applied on about 75 per cent. of the traffic.

Similar exceptional rates are made by every state railway system in Europe. Their purpose in Germany is officially stated to be "the advancement of internal industrial and agricultural production by the granting of facilities for the supply of raw materials; to assist the native products to obtain markets in competition with foreign rivals

⁷ The following table from the "Board of Trade Report on the Railways of Germany," page 98, shows both the way in which the proportion of goods carried on the Prussian State Railways on

by granting facilities for export; to support the trade of German industrial centers, and more especially the seaports, against foreign competition; to support the inland means of communication, and principally the railways, against foreign competition."⁸

In consequence of all these changes, the simplicity which formerly characterized the German rates has disappeared. There are, in fact, few forms of departure from the cost basis of rate-making that the state railways of Germany, Austria-Hungary, Belgium, Italy and other European countries have not made in their exceptional tariffs. There has been complaint because the private railways of the United States and England sometimes have made lower rates for export than on goods moving between the same points for domestic consumption. The German State rail-

ausnahme rates has increased since 1892, and the tonnages that were carried on normal rates and on *ausnahme* rates in 1906:

GOODS TRAFFIC OVER THE PRUSSIAN STATE RAILWAYS

Year	Tons	Percentage conveyed at normal rates	Percentage conveyed at exceptional rates
1892	105,036,517	40.9	59.1
1895	86,406,992	38.7	61.3
1890	118,907,870	53.2	46.8
1895	146,653,849	54.33	45.67
1900	205,682,212	35.73	64.27
1906	283,288,622	35.68	64.32

In 1906 the figures for the various classes were:

A. Piece Goods.		Tons
1. General <i>Stückgut</i> Class		7,529,859
2. Modified "		3,187,015
3. Fast Goods Class		2,421,575
B. Wagon Loads.		
1. Class B		4,798,179
2. Class A1		2,251,903
3. Specific Tariff I		12,048,964
4. " II		13,105,160
5. Class A2		4,748,603
6. Special Tariff III		61,119,983
7. Fast Goods in Wagon Loads		422,668
C. <i>Ausnahme</i> Tariffs		171,655,213

⁸ Board of Trade Report on German Railways, p. 99.

ways make numerous rates in the same way. The following domestic and export rates from Cologne to Hamburg illustrate the general policy followed⁹:

	Domestic rate per 100 pounds, cents	Export rate per 100 pounds, cents
Copper wares	29.2	14.3
Lead, in blocks, leaden tubes, pipes, zinc in sheets	22.1	14.4
Cottonwool wares	29.2	16.6
Machinery and machine parts, iron wares of all descriptions.	22.1	11.5
Iron plates, railway locomotives	17.5	6.09

It has been complained in Germany, as in the United States, that by making export rates lower than domestic rates the railways favor the foreign, at the expense of the domestic, consumer. And it has been answered there, as here, that it is necessary to make the export rates low to enable the German producer to compete effectively in foreign markets against the producers of other countries. The German railways also make some import rates lower than domestic rates on commodities moving between the same points. However, this is done chiefly in the case of raw materials imported for purposes of manufacture, while in the United States it has sometimes been done in contravention of the protective tariff policy of the nation.

Many of the discriminations in rates referred to are made to secure trade for the German ports in competition with the ports of other countries. There is sharp competition between the German ports of Hamburg and Bremen,

⁹ Board of Trade Report on German Railways, p. 104.

the Belgian port of Antwerp and the Dutch port of Rotterdam. The distance to Hamburg from Dusseldorf, for example, is much greater than to Rotterdam or Antwerp; and, to cause export traffic moving from Dusseldorf to go via Hamburg rather than Antwerp or Rotterdam the German State railways make export rates to Hamburg much lower than the domestic rates. The distances from Dusseldorf to Rotterdam, Antwerp and Hamburg and the local and export rates on steel forgings are ¹⁰:

	Distance miles	Local rate	Export rate
Rotterdam	136.40	\$1.464	\$1.416
Antwerp	120.28	1.728	1.248
Hamburg	239.32	2.328	1.296

It has been a ground of complaint in many countries that private railways often make lower rates for longer than for shorter hauls, when they meet railway or waterway competition at a more distant point, but not at a nearer point. Rates are made similarly in some cases by the State railways of Europe. The rate of the German State railways on German grain originating near the Russian frontier and moving to Königsberg for local consumption is 6.2 mills per ton mile. Russian grain may move either over the same lines through Germany to Königsberg for export, or it may move over the Russian railways via Riga, Reval or Libau. In order to capture this traffic, the German State railways make a rate from the Russian frontier to Königsberg for export of 3.88 mills per ton per mile, or 37½ per cent. lower than the domestic rate for the same haul. "A complaint was made that the Prussian

¹⁰ Board of Trade Report on German Railways, p. 123.

State Railways were, therefore, favoring the foreigner at the expense of the home producer, but it was pointed out that this special low rate was granted with the hope of securing the traffic to the Prussian railways, as it need not necessarily pass over the Prussian lines." ¹¹

There is sharp competition between the Austrian and the German State railways for traffic originating in Central Europe and moving to the Levant either via the Austrian lines to Trieste and thence by water, or via the German lines to Hamburg or Bremen and thence by water. Therefore, while the German domestic rate for "goods not specially classified" from Salzburg to Bremen, a distance of 562 miles, is \$13.43 per ton for 10-ton lots, the through rail-and-steamship rate from Salzburg via Bremen to the Levant is only \$12.82, or 61 cents less than the domestic rate to Bremen. "The Deutsche-Levant tariff has its parallel in the Austro-Levant tariff, and, although the conditions are not such that active competition can exist from the more northern points of Germany, the railways in Austria use all endeavors to secure traffic by making rates from the more southern parts of Germany somewhat on a par with the rates via Hamburg. No definite bases exist for these rates, they being adjusted to meet individual circumstances." ¹²

It has often been complained against private railways that if they can afford to make low competitive rates they can afford to make equally low non-competitive rates, and that it is an unfair discrimination for them not to do so. The answer of private and state railways in like circumstances is the same, viz., that the low rates have to be made to capture the competitive traffic; that if such traffic can be taken by rates that cover the out-of-pocket ex-

¹¹ Board of Trade Report on Railways of Germany, p. 99.

¹² Board of Trade Report on Railways in Austria and Hungary, p. 65.

pense it is worth having; that the taking of it at low rates does not injure other shippers who pay higher rates, because the fact that it is necessary to make low rates to capture the traffic from competing lines shows that it would move at low rates in any event; and that the railways could not make all their rates as low in proportion as those based on out-of-pocket expense, because to do so would bankrupt them.

There is, however, as has been intimated, one wide difference between the rate-making policy of state and private railways. This is, that while private railways base all their rates largely on the value of the service — or what the traffic will bear — state railways tend to put and keep on a distance basis those of their rates which are not directly affected by the competition of the transportation systems, ports or producers of other countries. This means practically all of the rates for hauls beginning and ending within the country. The main reason for this difference is that where private ownership is the preponderant or exclusive policy, as in the United Kingdom, the United States and Canada, the different railways encounter at innumerable points the competition not only of foreign transportation systems, but also of each other and of waterways. Usually "the short line determines the rate" between any two points common to two or more railways, after which the rivalry for traffic between these points takes the form solely of competition in service. Other forms of competition in rates are not of so transitory a character. The competition in rates between private railways and parallel waterways always continues until the waterways are practically driven out of business, or until the lower rates, but relatively inferior service, of the waterways counterbalance the higher rates, but relatively superior service, of the railways. The competition in rates between transportation lines serving dif-

ferent territories, although less direct and obtrusive than that between parallel lines, can never cease as long as the transportation lines are under different managements, because the forces that promote it are numerous and of a most persistent and compelling character. It is due to rivalry not only between the railways themselves, but between all the points of production and all of the markets which they directly or indirectly serve. Every producing point or market, however small, on each transportation line is in competition with numerous other producing points and markets on other lines. The wheat grower at the smallest station in South Dakota is in competition in the Chicago market with the wheat grower in Nebraska, and in the Liverpool market with the wheat growers of Argentina and Russia. Likewise, New York, Chicago, Minneapolis, St. Louis, Omaha, Kansas City and innumerable other markets, not only in this country but throughout the world, are in competition for the grain of every part of the American wheat belt. As this competition between producers and markets can never cease, so neither can that between the railways serving them.

Under the pressure from industrial and commercial conditions private railways commonly adjust their rates according to what the traffic will bear, and in the process often disregard distance. If, for example, two railways serve the same market, and one has on its line a coal mine 100 miles from the market, and the other has on its line a coal mine 200 miles from the market, the latter will disregard distance to almost any extent that may be necessary to make a rate that will enable the coal produced on its line to compete in the common market with the coal produced on the other line. The rate necessary may be very low; but it is better from the railway's standpoint to carry the coal at any rate that will cover "out-of-pocket" expense than not to carry it at all.

On the other hand, where, as in Germany, Belgium, Austria-Hungary and Australasia, the governments are dominant in transportation, both by rail and water, there cannot be any effective domestic competition in rates. State railway managements refrain from adjusting their domestic rates on the basis of what the traffic will bear partly because of this absence of competition, partly as a matter of principle, partly because of conditions that are beyond their control.

Doubtless, the distance basis often is strictly adhered to in the belief that it is equitable and expedient. But that this is by no means always the case is shown by the fact that state railway managements have in many cases sought to depart from the distance basis, and have been prevented by obstacles such as are encountered under both state and private management, but which are peculiarly hard for state railway managements to overcome. A private railway serves only a certain clearly defined part of a country, and is influenced only by the demands and considerations affecting the welfare of that part. Therefore, while it must consider the demands and welfare of each portion of its own territory, it can adjust its rates so as especially to promote the interests of that territory, and without much regard to the demands or interests of other territories. If it deems it necessary to make certain rates to secure business for its markets, or to open markets for its producers, it is pretty free to do so.

A state railway system, on the other hand, serves all parts of a country. There is as much potential competition between the producing centers and markets of a country having state as between those of one having private railways. The demands and pressure of all these contending and competing interests converge on the state railway management. It is not enough that, with its expert knowledge and position of impartiality, it shall be satisfied

that a particular adjustment of rates is fair and beneficial to the nation. It must also be prepared to satisfy each section and community that no rate disfavors it as compared with any other section or community. This is sure to be extremely hard to do unless rates are made on some very simple and seemingly uniform basis. Now, nothing is less simple or apparently less uniform than rates based on what the traffic will bear. Likewise, nothing seems to be more simple and uniform than rates based on distance. It is chiefly for these reasons that in making domestic rates — which are much more likely than export rates, for example, to become the subject of sectional controversies — state railway managements as inevitably gravitate toward the distance basis as private railway managements do toward basing rates on what the traffic will bear. Whether in Europe or Australasia we find the same tendency in state railway rate-making. As we have already seen, domestic rates in Germany are chiefly on a mileage basis. So we find it said of New Zealand, that "the rates on small, disconnected lines are the same as those on main trunk lines, and the smaller wayside station pays no more than the larger city. . . . Doubtless a system of differential rating designed to favor populous districts would prove profitable, but it would cause more discussion and criticism than any railway administration could stand. While making some special concessions to certain localities, and for the benefit of certain industries, as timber and coal, the department, for the most part, takes refuge in an almost inflexible system of rates, and, instead of modifying the rates in accordance with the conditions and changes of business, has compelled business to accommodate itself to the established rates, regardless of special circumstances and special needs."¹³ The same statements

¹³ "Railways in New Zealand," by James Edward LeRossignol

apply in their full effect to all the state railways of Australasia.

Since state railways inevitably tend to base domestic rates on distance, while private railways inevitably tend to base them on what the traffic will bear, it is very important, in weighing the relative advantages of state and private management, to consider which of these methods of rate-making is best adapted to promoting the public welfare — "the greatest good of the greatest number."

The most fundamental difference between the results of the two practices is that under the system of basing rates on distance they ordinarily are made relatively low for short distances and relatively high for long distances, while under the system of charging what the traffic will bear they ordinarily are made relatively high for short distances and relatively low for long distances. The tendency of the former kind of adjustment necessarily is to hinder producers in different communities from invading one another's territories, to restrict industrial and commercial competition and to build up local monopolies, or quasi-monopolies. The tendency of the latter form of adjustment is to aid producers in widely separated communities to invade one another's territories and to foster general industrial and commercial competition.

The point will be made clearer by some illustrations drawn from experience under state railway management in Germany, and under private railway management in the United States. In 1888 the agricultural interests of Eastern Prussia petitioned the government to reduce the haulage charges on grain, which had been 1.557 cents per ton mile since 1877. The petition was denied on the ground that the reduction would be an inequitable depar-

and William Downie Stewart, *Quarterly Journal of Economics*, Aug., 1909.

ture from the scheme of uniform rates, since it would let the farmers of Eastern Prussia invade the markets heretofore held by those of Central and Western Prussia. In 1891, nevertheless, crop failures caused the government to lower the grain rates to 1.038 cents per ton mile for the part of the haul between 125 and 187 miles, and to .692 cents for the part of the haul above 187 miles. The governments of Saxony, Bavaria, Wurtemberg and Baden protested against these reductions. They claimed that the geographical positions of their farmers and millers gave them a right to supply the markets of Western Germany which was violated by admitting the producers of Eastern Prussia to competition with them. The governments of these states finally notified the government of Prussia that unless the reduced grain rates were withdrawn their representatives in the Imperial Parliament would vote against a commercial treaty with Russia that was pending. In consequence, in 1894, the rates were withdrawn. A year later Mr. von Thielen, the Prussian Minister of Public Works, said that under the existing rates 125 miles seemed to be the maximum distance that grain for domestic consumption could move in Germany. In 1899 he remarked that for many purposes of trade Eastern Germany and Rhenish Prussia were farther apart than Germany and New York, or Germany and Buenos Aires.¹⁴

This incident contrasts sharply with developments that were occurring in the United States at the same time. Great tracts of land in the Western part of this country were then being opened for the growing of grain. For consumers of their products the Western farmers had to look to the densely populated Eastern states and to Europe. There was a great deal of grain grown in the Eastern and Central States, which were much nearer to

¹⁴ H. R. Meyer: "Government Regulation of Railway Rates," p. 10.

the large points of consumption. If grain rates in the United States had been based on distance the Eastern and Central farmers could have held the Eastern markets against the growers in Kansas, Nebraska and the Dakotas indefinitely. The development of the West would thereby have been greatly hindered. It was to the interest of the railways to disregard distance and make rates on which this Western grain could move. There was no influence that could prevent them from doing so. In consequence, they rapidly and greatly reduced the rates and opened up to Western grain the markets of the East and of the world.

Another example of the difficulties state railway managements meet in adjusting rates to conditions is afforded by the protracted controversy over the German rates on iron ore. The Ruhr district is the greatest coal mining and iron and steel producing region of continental Europe. About 220 miles southwest of it are the extensive ore deposits of Luxemburg and the Saar district, which furnish precisely the ores needed to supplement the insufficient supply obtainable from the Ruhr district itself. For years there were demands for reductions in the rates on ores from the Saar district to the Ruhr district. In 1889 "the Minister of Public Works, Mr. von Maybach, informed the Prussian Diet that the government's refusal to grant the requests from the Ruhr district for lower rates on Saar iron ores was due to the unwillingness of the government to prefer the Ruhr to other iron-producing centers. It would not do to give one district rates which would enable it to grow more rapidly than another district. Equal treatment must be accorded to all. Moreover, the government could not make reductions which would expose it to even the suspicion of preferring one district." The General Railway Advisory Council in December, 1897, reported in favor of the reduction

in rates. A year later, no action having been taken, the Minister of Public Works, Mr. von Thielen, "cited this state of affairs as a significant illustration of the blocking of government action by local jealousies." Meantime, there was an empty car movement from the Saar to the Ruhr district, and the railway administration admitted that the railways would profit by the increase in traffic that the proposed reduction in rates would cause.¹⁵

What the managements of the railways of the United States would have done in the same circumstances is plain. Formerly merchandise was forwarded to the Pacific Northwest in cars which returned eastward empty. Recognizing the fact that a very low rate which would get traffic to fill these empty cars would be profitable the railways in 1894 made heavy reductions in the charges on lumber from the Northwest. In consequence they built up so much lumber traffic that in a few years they were embarrassed to find that the empty car movement had changed from eastward to westward.

The foregoing examples illustrate why state railways find it difficult or impossible to make domestic rates according to what the traffic will bear, while private railways can and do thus make them. It also illustrates the results of the two policies of rate-making. Which policy will be considered the more equitable and expedient will depend on the point of view. The subject is often discussed as if only producers and shippers were concerned. But the whole consuming public is also concerned. The producer's interests are often conflicting. It is to his interest to have rates so made as to prevent competing producers from invading his territory; but it is also to his interest to have them so made as to enable him to in-

¹⁵ H. R. Meyer: "Government Regulation of Railway Rates," p. 20.

vade the territories of other producers. As to the consumer, it is to his interest to have rates so made as to foster and maintain reasonable but active competition between the producers and shippers of all territories and communities; for such competition is the best assurance of industrial and commercial efficiency, low costs of production and low prices. It is to the interest of producers, consumers and railways to have rates so adjusted as to develop the maximum volume of traffic; for this makes it practicable to handle traffic most cheaply and to make the lowest rates. The system of basing rates on what the traffic will bear is far better adapted to increasing the volume of traffic and fostering industrial and commercial competition than is the distance scheme of rate-making; it would seem, therefore, that it is more beneficial in the long run for railways, producers and consumers; and the fact that state railway managements do not and cannot adjust their domestic rates as closely to what the traffic will bear as private railways is one of the strongest arguments against public ownership.

It has been largely owing to its inability to adjust rates according to the needs of commerce and industry that the German State has engaged so extensively during the last quarter century in the development of inland waterways. It has also been largely owing to the rigidity of the domestic rates of the German State railways that the growth of water traffic in that country has been so rapid in recent years, when in England and the United States most of the inland waterways have been unable to withstand the competition of the railways. It has sometimes been said that the German waterways have been developed to relieve the railways of low grade traffic which was unprofitable because it could pay only low rates. But low grade traffic paying low rates is not unprofitable if handled in large carloads and train loads. The railways of the United

States have so developed their facilities that they handle traffic in larger carloads and trainloads than any other railways. They have thereby made such commodities as coal, ore, grain and forest products moving in large volume their most profitable business. Again, it has been said that the development of waterways has been necessary in Germany because the traffic has grown too heavy for the railways to handle it. But there has never yet been discovered any real limit to the extent to which the physical capacity of a railway can be developed.¹⁶ Finally, it has been said that the waterways have been developed because water transportation is cheaper than rail transportation. But the evidence does not support the view that in Germany or elsewhere the total cost of transportation can be made less on canals or canalized rivers than on railways.¹⁷ The chief reason why the waterways of Germany have been able to increase their traffic so much faster than the railways has been that the waterways have been allowed to adjust their rates according to what the traffic will bear while the railways have not been. There seems to be a marked inconsistency in a public policy which refuses to let railways base their rates on what the traffic will bear, and then expends public money for the development of waterways, the carriers on which are permitted and

¹⁶ For a discussion on this point see "Waterways Versus Railways," by Professor H. G. Moulton, p. 246.

¹⁷ See "Waterways Versus Railways," by Professor H. G. Moulton, for a very thorough discussion of this subject. Professor Moulton shows by elaborate statistics that the cost of transportation on all the German waterways, except the Rhine, is more than on the German railways if the expense incurred by the government in providing the waterways as well as the rates paid by the shippers be included. See also the author's "The American Transportation Question" (D. Appleton & Co.), pp. 178-221, and an article entitled "Freight Rates by Water and by Rail," by J. L. Payne, in the *Railway Age Gazette*, April 18, 1913, p. 871.

encouraged to thus make their rates. The communities on the waterways are, at the expense of the entire country, given lower rates than communities that are without water transportation; and the very same kind of discrimination in rates between localities is thus introduced which distance tariffs on railways are advocated as a means of avoiding.

The circumstances with which the state railway managements of Australia have had to deal in adjusting rates have been radically different from those surrounding the managements of the state railways of Europe. The Australian lines have not encountered the competition of waterways and of foreign railways as have those of Germany and Austria. And there has been little competition between the railways of the different Australian states. They have occupied different territories and served different markets, and only to a limited extent have got their traffic from the same producing centers. Where they have tapped the same producing territories the powers of the different governments sometimes have been exerted in a remarkable way to cause traffic to move over their respective lines. In 1893 the Parliament of Queensland adopted a resolution setting forth that it had been "ascertained that differential rates on the railway lines of the neighboring colonies have been promulgated and otherwise arranged for, which have had and are continuing to have the effect of diverting the traffic which ought legitimately to be conveyed over the railway lines of this colony, thereby entailing a considerable loss of railway revenue," and "that it is considered desirable to prevent as far as practicable this diversion of traffic." It was therefore enacted that "every ton of Queensland produce crossing the border for transportation by the railways of another colony should pay a tax of \$12.08." Any person who evaded the tax was made liable to a penalty of \$500, and all

property directly concerned in effecting the evasion, and the commodities and the vehicles used for hauling them, were made subject to forfeiture.¹⁸

There are three different ways in which rates that are based fundamentally on distance can be adjusted. They can be made an equal amount for each mile goods are hauled, with additional charges for terminal handling; or they can be made according to the zone system, under which the rate for, say, 25 miles, is a certain amount per mile, the rate for 50 miles a smaller amount per mile, etc.; or they can be made on the tapering principle, so that the through rate is always less than the sum of the local rates for the same distance. The German domestic rates are commonly an equal amount per ton mile, with an additional terminal charge. The French rates ordinarily taper. The tapering system has also been adopted in Australia. To this has been largely attributed the remarkable growth of population, commerce and industry in a few large cities on the coast as compared with the development of the interior.¹⁹ Suppose a town which is the interior terminus of a railway builds up a distributing business in the immediately surrounding territory. When the railway is extended, and the tapering rate basis is applied, it becomes possible for the merchant at Melbourne, or Sydney, or Adelaide, to ship goods from the coast to points on the new line cheaper than the merchant at the former terminus can ship from the coast to his city and then re-ship to points on the new line. Being thus undersold, the merchant at the old terminus is apt to be forced either to quit business, or to move to the new terminus, or to move to one of the coast cities. Under the "basing point" system of rate-making in the United States, the

¹⁸ "State Railways," by Edwin A. Pratt, p. 40.

¹⁹ H. R. Meyer: "Government Regulation of Railway Rates," p. 189.

through rate from New York to a small interior place in the Southeast is the sum of the local rate from New York to Atlanta, for example, and of the local rate from Atlanta to the small interior place. This system of rate-making has been sharply attacked in the United States as involving unjust discrimination. It has, however, been the means of enabling many interior jobbing centers to compete with the larger cities on the Atlantic seaboard, and in at least one case shippers have appealed to a state railway administration in a new country for the adoption of basing point rates. The railways of South Africa are owned by the government; and the report of their general manager for the year ending December, 1911, discusses the "idea entertained by certain members of the mercantile community that the adoption of what are known as basing-point rates would meet the requirements of the country and facilitate its development . . . better than the present system of distribution rates." As W. M. Acworth remarks, it is interesting to find that in the United States it is the railways that defend the basing-point system and certain mercantile communities that attack it, while in South Africa it is the mercantile interests that demand it and the railways that resist.²⁰

Tapering rates would not tend to give the business men of the large Australian coast cities monopolies in their own colonies if the railways were physically connected into a single system having a uniform gauge. The large cities would then compete with each other for the business of interior points, and the tapering rates would stimulate competition between them more than flat mileage rates. Australia having now become united politically, doubtless it is but a matter of time until all the railways will be physically connected. The evil effects—if such they

²⁰ *Railway Age Gazette*, Jan. 10, 1913, p. 49.

really are—of the tapering system will then to a great extent disappear. But Australia seems likely to be introduced at the same time to the local and territorial rivalries and controversies which have made readjustments of rates in Germany so difficult.

While the results of fixing domestic rates rigidly on distance in a relatively small country like New Zealand, or even Germany, must be somewhat harmful, the effects would necessarily be more marked in a very large country such as the United States. With rates on a distance basis, it is impossible to conceive of traffic moving as freely throughout this country as it does now. That there would be a tendency to put rates on this basis under government ownership, there seems to be no question. The demands of all communities would then be concentrated on a single rate-making authority. The Interstate Commerce Commission, in regulating rates, is to a great extent protected from having unreasonable demands pressed on it by the fact that it is known that it must respect the legal rights of the railway companies. A government railway management would not have any such protection. Probably it would have to fall back on some scheme of rate-making which would be defensible on the ground of uniformity. Now, uniform rates applied to diverse conditions are not based on either the cost of the service or the value of the service, are unjust and do harm.

The principal conclusions indicated by the discussion in this chapter may be summarized as follows: State railways tend to make their passenger rates low at the expense of their freight traffic, which operates as an unfair discrimination against the shippers of freight, imposes an unnecessary burden on commerce and industry and is contrary to the best interests of the public. Private railways, in making their freight rates, are more apt than state railways to discriminate unfairly and injuriously be-

tween persons and communities. State railways tend to put their domestic rates on a rigid distance basis, which interferes with the development of a large traffic, prevents the freest industrial and commercial competition, and builds up local monopolies or quasi-monopolies. The shortcomings of private railway managements in making rates can be corrected to a large extent by government regulation. Those of state railway managements are harder to correct because there is no power that can control the government except the public, and the faults of government rate-making usually are chiefly due to the attitudes of the various parts of the public itself.

CHAPTER XV

RATE-MAKING: THE AMOUNT OF RATES

THE discussion in earlier chapters led to the conclusion that it usually costs governments more than private companies to furnish transportation. This makes it necessary for state railways either to charge higher rates than private railways or to content themselves with smaller financial returns. The disposition of government railways to fix their freight rates rigidly according to mileage also tends to make them relatively high; for rates based on what the traffic will bear will develop a larger traffic than rates based on distance; and the larger is the volume of the traffic the lower can the rates be made. From these economic considerations we should expect to find the rates of state railways higher, under similar conditions, than those of private railways. On the other hand, ordinarily, we should expect that the managements of state railways would offer less resistance than those of private railways to reductions in rates that would reduce profits, and would be more disposed to make reductions that would please the public.

One might think that experience would show whether state or private railways actually make the lower rates. But experience is not uniform. Most governments have made reductions in rates soon after nationalization. But these often have been followed by advances, particularly in freight rates. "Half the state railway systems of Europe have made important increases in rates within the last few years: Russia, Austria, Hungary, Denmark,

even Switzerland quite recently; while Prussia, in spite of the fact that its railways are already called upon to pay a very large portion of the general expenses of the government, has in the last year or two put a very heavy tax on railway passenger tickets."¹

As to the rates made contemporaneously by private and state railways, the differences in conditions that must be allowed for in comparing the rates of different railways, and especially those of the railways of different countries, are so great that it is hard to decide exactly what lessons they teach. On the one hand, there must be considered the conditions determining the expenses necessarily incurred in rendering the transportation service. A system of railways built in a level country, where construction costs and wages are low, and having a large volume of traffic which it hauls for long distances, can afford to make lower rates than one built in a hilly or mountainous country where construction costs and wages are high, and there is only a light traffic which is carried but short distances. Whether the management be capable or incapable, the rates must vary according to these conditions if earnings are to be adequate. On the other hand, there must be considered the general levels of prices and incomes and the standards of living in the countries where the service is rendered, for these things are measures of what the people of a country can afford to pay for transportation.

The only really practical way to compare the rates of different railways is to ascertain their average rates per ton mile and passenger mile, and then allow for the differences between the conditions under which the railways operate. This applies with special force to freight rates.

¹ W. M. Acworth, "Studies in Railway Economics," *Railway Age Gazette*, Jan. 27, 1911.

The method outlined may be helpfully supplemented by comparisons of specific rates. But there are millions of rates on every considerable railway system, and it is easy to pick out from them numerous specific rates which will apparently support any proposition that may be advanced.

There was given in the preceding chapter² a table containing the average rates per passenger mile and ton mile of eight typical systems of government and six typical systems of private railways. If we judged entirely by these we should conclude that state railways generally make lower passenger rates than private railways, and that private railways usually make lower freight rates than state railways. But let us examine somewhat into the facts as to the rates of some important and typical railway systems and the conditions under which they are charged.

We have seen already³ that both the capital investment and operating expenses of the British private railways are higher than those of the Prussian State railways in proportion to their volume of traffic, and that there are some good reasons for this. The differences in the lengths of the average hauls in the two countries are of the first importance. The average haul per ton on the North Eastern of England, which is probably typical, is only 23 miles, while on the Prussian-Hessian lines it is 69 miles. Therefore, in handling a given ton mileage, the North Eastern must render three times as much terminal service and incur three times as much terminal expense as the Prussian railways, not including collection and delivery, which service the British railways perform while the Prussian railways do not. Furthermore, the density of both freight and passenger traffic in the United Kingdom is apparently less than in Prussia. These and other

² See p. 258.

³ See p. 169.

conditions tend to make it necessary for the British railways to charge higher rates than the Prussian railways.

On the other hand, the average railway wage is probably about 15 per cent. less in the United Kingdom than in Prussia. This tends to help the British railways to keep down their operating expenses. It is also a partial index to the general levels of wages in the United Kingdom and Prussia, and therefore, to the relative railway rates that their peoples can afford to pay. Further light is thrown on this phase of the matter by the relative costs of living in the two countries. The cost of living depends chiefly on the prices of commodities; and the lower are the prices of commodities the less can those who produce and ship them afford to pay for transportation. The data indicate that the cost of living is somewhat lower in England than in Germany. It has been estimated within recent years that a German working man transported to England and living there according to his old standard of comfort would find his expenses reduced about 7½ per cent.; while an English working man moving to Germany and living at his old standard would find his expenses increased about 18 per cent.⁴

The foregoing indicates that, on the whole, the cost of furnishing transportation is necessarily greater in the United Kingdom than in Prussia and that, therefore, the British railways cannot afford to make as low rates as the Prussian. But wages and the cost of living being lower in Great Britain than in Prussia, it follows that the people of Great Britain are not relatively as able to pay any given rates as the people of Prussia. How, then, do the rates in the two countries actually compare?

⁴ Bureau of Railway Economics, Washington, D. C., *Bulletin* 34. "A Comparative Study of Railway Wages and the Cost of Living in the United States, the United Kingdom and the principal countries of continental Europe," p. 67.

The average rates per ton mile and passenger mile in Great Britain are not known. The average per ton mile is supposed to be slightly over 2 cents, and per passenger mile about 1.75 cents. The standard passenger fares are: First-class, 4 cents; second-class, 2½ cents; third-class, 2 cents; but there are numerous special tickets sold which reduce the average. The average rate per ton mile in Prussia is 1.24 cents; the average per passenger mile, .88 cent. The average revenues per mile from different classes of passenger traffic in Prussia in 1910, were: First-class, 2.89 cents; second-class, 1.49 cents; third-class, .93 cent; fourth-class, .69 cent; military, .39 cent. The low average per passenger mile was due to the fact that almost 40 per cent. of the traveling was done third-class, and almost 45 per cent. fourth-class, while only 11 per cent. was done second-class, and less than 1 per cent. first-class.⁵

Comparisons of specific rates for hauls of similar lengths tend to corroborate the impression given by the average rates, that the freight rates of the State railways of Prussia are substantially lower than those of the private railways of the United Kingdom. It is clear that their passenger rates are lower, although the apparent discrepancy becomes smaller when it is considered that the Prussian lines charge for some services that the British roads do not, as for the carriage of baggage. In other words, rates in the United Kingdom are higher in proportion to the general level of wages and the cost of living than they are in Prussia. Whether the rates of the British roads are higher in proportion to expenses that have been and are unavoidable by their managements is another question, but apparently they are.

⁵ "The Administration of the State Railways of Prussia-Hesse," by Professor W. J. Cunningham. Proceedings of the New York Railroad Club, May, 1913.

The leading private railways of continental Europe are the five large lines in France. The density of the passenger traffic of the French private roads is about 12 per cent. greater than that of the two French government roads, and the average journey on them is somewhat longer. The average passenger rate on the state-owned Western is 1.07 cents, and on the old State system 1.03 cents. On the private roads it is from 1.11 to 1.25 cents. As to freight traffic, the volume of it on the private roads is about three times as great as on the state railways, and their average haul is somewhat longer. The average rate per ton mile on the Western Railway is 1.6 cents and on the old State system 1.55 cents, while on the private roads it is from 1.18 to 1.46 cents. In view of the greater densities of traffic on the private roads, and their longer hauls, their average freight and passenger rates seem relatively higher than those of the state railroads. But neither of the state railways earns the interest on the investment in it. Therefore, the rates paid by shippers and travelers on them do not cover the total cost of transportation. The rest of it is paid by the French taxpayer.

The average hauls of the large private railways of France are longer than those of the Prussian-Hessian state lines, but their densities of traffic are less and the wages paid by them are apparently somewhat higher. The conditions seemingly tend, as a whole, to make the cost of furnishing each unit of transportation greater in France than in Prussia. Furthermore, measured by wages, the prices of the commodities shipped, and the general cost of living, the French people are able to pay higher rates than those of Germany. Now, the average passenger rate of the Prussian state lines is somewhat lower than that of the French private lines, while the average freight rates are almost the same. On the whole, rates certainly

are relatively as low on the French private roads as on the Prussian state railways.

One of the arguments made by Prince Bismarck for government ownership in Germany was that rates would be reduced faster under government than under private management. On the whole, however, rates have not been reduced as fast in proportion in Germany under State management during the last twenty years as in France, where private management has preponderated. The following table shows the revenues per passenger mile and per ton mile in the two countries in 1890 and 1910 and the percentages by which they were reduced in this period of twenty years:

	Prussia-Hesse		Per Cent. Reduction	France		Per Cent. Reduction
	1890 ^a	1910		1890	1910	
Average rate per passenger mile, cents	1.13	.88	22	1.37	1.07	22
Average rate per ton mile, cents	1.32	1.24	6	1.54	1.20	22

Turning to Canada, we find that the only considerable government railway, the Intercolonial, makes average rates substantially lower, considering all the conditions, than the private railways. But the case of the Intercolonial strikingly illustrates the point that low rates do not necessarily indicate a low cost of transportation. It has never earned interest on the investment in it. Its gross earnings in 1911 would have had to be 30 per cent. larger than they were to cover its operating expenses and $3\frac{1}{2}$ per cent. interest on its debt. For it to have earned 30 per cent. more gross, its rates doubtless would have had to be

^a Prussia only.

30 per cent. higher. Now, if its average passenger rate had been 30 per cent. higher, it would have been 2.155 cents, as compared with 1.94 cents for all the railways of Canada; and if its average freight had been 30 per cent. higher it would have been .7566 cent, as compared with .777 cent for all the railways of Canada. Even with rates as high as those of the other railways of Canada, the government would have derived no surplus earnings from the Intercolonial that could have been used for making improvements in it or for public purposes. The interest on the Intercolonial's debt was paid from the public treasury. That is, all of the people of Canada were taxed in order that the relatively few who traveled and shipped over it might get their transportation for 30 per cent. less than the cost of furnishing it. In the summer of 1913 the Canadian government made numerous advances in the rates of the Intercolonial, some amounting to as much as 25 per cent.

The conditions that affect the costs of railway operation in Canada and in Australia are quite different. As we have seen elsewhere, the average passenger journey on the state railways of New South Wales, owing to the relatively large suburban traffic, is extremely short, while the average passenger traffic handled per mile is almost three times as great as it is in Canada. On the other hand, the density of freight traffic in Canada is over three times as great as in New South Wales, and the average haul almost three times as long. The conditions mentioned should make for a lower average passenger rate in New South Wales, and a lower average freight rate in Canada. There is one important condition, however, which greatly favors the New South Wales roads in handling both kinds of traffic. The average wage paid to railway employes in that country in 1912 was only \$525, while in Canada it was \$606, or 15½ per cent. more. If the Canadian roads

had paid only the same wages as those of New South Wales, they could have made their average rates considerably lower than they did without affecting their net earnings.

Not only do the wages paid affect the costs of railway operation in the two countries, but doubtless they are to some extent indicative of the differences between the wages in general and of the costs of living, and therefore between the abilities of the peoples of New South Wales and of Canada to pay any given scale of rates. Now, the average rate per passenger mile in New South Wales is 1.04 cents and in Canada 1.94 cents. The average rate per ton mile in New South Wales is 1.78 cents, and in Canada .757 cent. If a man wished both to travel 100 miles and to ship a ton of goods 100 miles, the railways of New South Wales would charge him \$2.82 for the two services, while those of Canada would charge him \$2.70. The employes of the Canadian lines over which he traveled and shipped would be paid 15½ per cent. more for the work they did in connection with the rendering of the services; and, if railway wages in the two countries are anywhere near typical of wages in general in the two countries, a workingman in Canada would have a larger income from which to pay his transportation bill than a workingman in New South Wales. Messrs. LeRossignol and Stewart, in their study of the railways of New Zealand, concluded that the average passenger rate in that country is slightly less than 2 cents and the average freight rate not much less than 4 cents;⁷ and probably on the average a day's wage in Canada will buy as much passenger transportation as a day's wage in Australasia, and three or four times as much freight transportation.

⁷ "Railways in New Zealand," by James Edward LeRossignol and William Downie Stewart, *Quarterly Journal of Economics*, Aug., 1909.

What the people of the United States are most interested in, however, is whether the rates made under private ownership in this country are as low relatively as the rates made by the state railways in other countries, and whether rates here probably would be higher or lower under government ownership. The data already given in the table on page 258 shows that the average passenger rate in the United States is higher than it is in most other countries under either private or public ownership. On the other hand, the average freight rate in this country is lower than in any other country except Japan. Do these averages indicate what they seem to? Taken together, the freight and passenger rates of the Prussian-Hessian railways are lower than those of any other system of state railways except that of Japan; and both wages and the cost of living are much lower in Japan than in Europe. How will the rates of the railways of the United States bear comparison, in the light of the various conditions affecting what railways must charge and what those who use their service can afford to pay, with the rates of the Prussian-Hessian railways?

The average passenger journey and the average freight haul in the United States are twice as long as in Prussia-Hesse. Therefore, in dealing with a given amount of traffic the Prussian railways must render twice as much terminal service as those of the United States. But the density of freight traffic of the Prussian-Hessian roads is somewhat greater than that of the railways of the United States; and their passenger traffic is five and a half times as dense. Besides, the average wage of railway labor is twice as great in the United States as in Prussia. If the railways of this country could reduce their wages to the same level as those paid in Prussia, and other things remained equal, they could reduce both their passenger and freight rates 20 per cent. without reducing their net earn-

ings. These are some of the conditions affecting the expenses of the railways of the two countries.

The difference between the railway wages paid in the two countries probably is not far from typical of the differences between wages in general. Therefore, relatively, the Prussian is not able to pay much, if any, more than half as much for transportation as the American. The average cost of living in Prussia probably is from two-thirds to three-fourths as much as it is in the United States.⁸ It follows that any rate which is the same in the United States as in Prussia is substantially lower compared with wages, prices and the cost of living in this country.

The average passenger rate in Prussia is .88 cent, and in the United States, 1.94 cents. These averages, however, do not reflect the rates for corresponding services. In the United States some services are rendered for nothing for which charges are made in Prussia. The railways of the United States carry free in the baggage car a maximum of 150 pounds of baggage for each passenger. The Prussian lines do not transport any baggage free except hand luggage. Baggage carried in baggage cars is charged for, and the revenue from this source in 1910 was \$1,370,000. This was 27 cents for each 100 pounds carried, and was equal to 3 per cent. of the total passenger revenue. The Prussian roads also have a special rate for dogs accompanying passengers, of which they carried 2,000,000 in 1910, and from which they derived a revenue of \$200,000. Furthermore, persons desiring to enter the Prussian passenger stations to meet or see off friends must buy admission tickets. Over 30,000,000 of these tickets are sold annually, or 85,000 per day, and in 1910 they

⁸ Professor W. J. Cunningham estimates that the cost of living in Berlin is from 60 to 66 per cent. of the cost in Boston.

yielded a revenue of \$738,000.⁹ As we have already seen, the Prussian passenger service is divided into five classes. The parlor car service in this country corresponds to the first-class service in Prussia, and our ordinary day coach service to the Prussian second-class service, while we have nothing so poor as the Prussian third and fourth-class services. Now, for similar services there is no great dissimilarity in the charges made in the two countries. The railway in this country whose densities of passenger and freight traffic and average hauls correspond most closely with those of the Prussian-Hessian railways, is the New York, New Haven & Hartford. Professor Cunningham gives a table of typical charges for similar passenger services on the New Haven and the Prussian-Hessian lines; and most of the Prussian rates cited are the higher.¹⁰ Persons

⁹ "The Administration of the State Railways of Prussia-Hesse," by Professor W. J. Cunningham. Proceedings of the New York Railroad Club, May, 1913.

¹⁰ The following is the table referred to, and is from Professor Cunningham's paper on "The Administration of the State Railways of Prussia-Hesse."

	N. Y. N. H. & H.				Prussia-Hesse							
	Parlor Cars	Limited Trains	Ordinary Trains		Fast trains				Slow trains			
			Parlor Cars	Coaches	First Class	Second Class	Third Class		First Class	Second Class	Third Class	Fourth Class
With 100 lbs. of checked baggage	\$6.75		\$5.75	\$4.75	\$7.92	\$5.71	\$4.27	\$7.67	\$5.43	\$4.10	\$3.21	
Without checked baggage	6.75		5.75	4.75	6.50	4.29	2.84	6.25	4.00	2.68	1.79	

who have traveled in both countries pretty generally agree that for similar services the Prussian-Hessian passenger rates are as high as those of the railways of the United States. It necessarily follows that in proportion to the general level of wages and the cost of living the Prussian rates for similar services are the higher. Even at the average rates per passenger mile in the two countries an average day's wage in the United States probably will buy 90 per cent. as much passenger transportation in this country as an average day's wage in Prussia will buy there.

The average rate per ton mile in Prussia is 1.24 cents; in the United States, .753 cent. While the Prussian roads render twice as much terminal service in proportion in handling a given ton mileage of freight as those of the United States, this is more than offset by the difference in the wages paid. Furthermore, when specific rates for equal distances in Prussia and the United States are compared it is found in a majority of cases that those in the United States are the lower, especially when the hauls are long. In proportion to the general cost of living the average rate per ton mile in Prussia is probably not far from three times as great as in the United States; and the average day's wage in Prussia probably will buy less than one-third as many ton miles of transportation as it will in the United States. Measured by the wages paid by the railways, by the general levels of wages and prices, and by the costs of living, in the two countries, freight rates are much lower in the United States than in Prussia.

Professor Cunningham, one of the latest, most thorough and most judicial students of the subject, in a recent paper before the New York Railroad Club, expressed the "opinion in passing that freight rates (in Prussia) are on the whole somewhat too high. The large surplus which is turned over to the state each year certainly is not made from the transportation of passengers. It must come from

freight. Freight shippers by rail, therefore, are being indirectly taxed for the benefit of the state at large, while shippers by water have the benefit of special subsidies which come from the public at large, making a conflicting situation." One of those who discussed Professor Cunningham's paper was Baron von Eltz, Mechanical Engineer of the German State railways, and Technical Attaché of the German Consulate-General of New York City. Baron von Eltz presented several arguments against Mr. Cunningham's conclusion that freight rates in Prussia are too high, but added, "Notwithstanding these facts Mr. Cunningham may be right when he thinks that our freight rates are somewhat too high. I would, however, prefer to turn the question the other way, by saying that your freight rates seem to me to be too low. . . . I believe that a comparison between the American and German rates tends, indeed, to strengthen the impression that American freight rates are low, if not too low."¹¹

Considering freight and passenger rates together, are rates, on the whole, higher or lower in the United States than in Prussia? If the railways of the United States had received in 1910 both the average freight rate and the average passenger rate of the Prussian-Hessian lines their earnings from freight and passengers would have been increased 35 per cent. If, in the same year, the Prussian roads had received the average freight and passenger rates of the railways of the United States the earnings of the Prussian roads from freight and passengers would have been increased also, but only by about nine per cent. If a man traveled 100 miles and shipped a ton of goods 100 miles in Prussia at the average rates, the two transactions would cost him \$2.23. If a man traveled 100 miles in the United States and shipped a ton of goods

¹¹ Proceedings of the New York Railroad Club, May, 1913, p. 3168.

100 miles at the average rates, the charges would be \$2.69, or 20.6 per cent. more than in Prussia. But in the United States the railways would pay twice as high wages to the men employed in connection with the rendering of the services; and as the user of the service in the United States would be getting probably twice as high wages as the user of it in Prussia, he would be much better able relatively to pay for it.

The reductions made in the average passenger and freight rates in Prussia and the United States during the last twenty years are indicated by the following table:

	Prussia-Hesse		Per Cent. Reduction	United States		Per Cent. Reduction
	1890 ¹²	1910		1890	1910	
Average revenue per passenger mile, cents	1.13	.88	22	2.167	1.938	10.5
Average revenue per ton mile, cents	1.32	1.24	6	.941	.753	20

The data on the subject indicate that state railway managements tend to make relatively lower passenger rates than private managements. They also indicate that private railway managements usually make relatively lower freight rates than state railway managements. In an earlier chapter some reasons have been given why low freight rates are more important than low passenger rates.¹³ An additional reason is that in a great majority of countries the freight ton mileage handled is larger than the passenger ton mileage, and, therefore, ordinarily the total saving to the public from low freight rates is greater than the total saving from low passenger rates. This point will be made clear by a very simple illustration.

¹² Prussia only.

¹³ See p. 255.

Suppose that the railways of two countries have exactly the same volume of passenger traffic, 500,000 passenger miles per miles of line, and the same volume of freight traffic, 1,000,000 ton miles per mile of line. In the first country the railways follow the policy of making their freight rates relatively lower than their passenger rates, their average passenger rate being 1.5 cents, and their average freight rate .75 cent. The amount that the passenger and freight service rendered on each mile of railway costs the public is then \$15,000. In the second country the railways adopt the policy of making their passenger rates relatively lower than their freight rates, their average passenger rate being .75 cent, and their average freight rate 1.5 cents. The amount that the passenger and freight service rendered on each mile of railway in this country costs the public, then, is \$18,750, or \$3,750 more.

The evidence available does not sustain the contention often made that government railways tend to make their rates as a whole lower than private railways do. It indicates that, considering both passenger and freight rates, the rates of the railways of the United States are relatively as low as, if not lower than, those made by any system of state railways. And as our investigation in previous chapters led to the belief that the adoption of government ownership in this country would tend to increase rather than to reduce the total cost of rendering railway service, it is impossible to escape the conclusion that under government ownership here rates could not be reduced without disregarding the financial results to the tax-paying public.

CHAPTER XVI

FINANCIAL RESULTS

It is prerequisite to considering intelligently the financial results to the public of government ownership of railways to get clearly in mind the difference between the financial relations of the railways and the public under private and public ownership. Under private ownership the public derives from the railways considerable sums in taxes. In countries such as the United Kingdom and the United States, where the governments have not guaranteed any return on the capital of railways, the public has, except in the matter of taxes, no direct concern with their financial results. It has, of course, an indirect concern; for it is to the interest of the people of a country that capital invested in any legitimate and prudently managed enterprise shall be fruitful. As to railways specifically, if they are left in private hands, and many of them do not pay, investors will grow discouraged and transportation facilities will not be adequately developed and improved. But, if, under private ownership, some of the railways are unprofitable, either because they have been unwisely or unfortunately conceived and built, or are imprudently managed, the direct financial losses fall on private capitalists.

In countries such as France and Canada, where the governments have guaranteed a return on part or all of the investment in private railways, the situation is quite different. Here, also, the governments ordinarily derive a revenue from the railways through taxation; but

here the public is further concerned with their financial results, because if earnings are insufficient to cover operating expenses and the fixed charges guaranteed by the government the public must supplement the earnings with tax-raised subsidies.

Under government ownership no taxes are paid by railways, except, sometimes, in small amounts and locally. The government borrows what it pays for the roads, just as it borrows for any other purpose, and pledges the public credit for the payment of the interest. Governments must do this to benefit by the superiority of credit which they ordinarily enjoy as compared with private companies. If the interest were secured merely by the revenues of the railways those who loaned money to governments to buy railways would take the same risk of loss from bad or unfortunate management as those who make loans to private companies; and a proportionately high rate of interest would be demanded. The interest being made a general charge on the resources, honor and credit of the nation, it must be paid to the last farthing at every period when it comes due. If there is a surplus beyond this the public profits thereby. If there is a deficit the public must pay it. If the railway system or any part of it be unprofitable, it cannot go through bankruptcy and have its securities scaled down until they are made to correspond with its earning capacity. Private railway companies, like physicians, bury their mistakes. The financial mistakes of state railways are immortal.

It is essential to the complete financial success of a railway, as of many other business concerns, that it shall earn not only its working expenses and a return on investment and taxes — if taxes be levied on it — but also a surplus. A surplus is needed for several purposes. One of these is, to provide for obsolescence. In every progressive industry new discoveries and inventions frequently

render it necessary to scrap equipment or structures which are not worn out, but which no longer measure up to new standards of service. When electric power was introduced much of the equipment of street railway cable lines was still in a condition to be used; but it had to be scrapped. The standard of service had been raised. Similarly, it is but a matter of time until electric power will supplant steam power on many railways. Much equipment will have to be sent to the scrap heap then which but for the higher standard of service would be usable for years. Changes such as these often cause direct or indirect economies in operation. But often the saving is insufficient to pay a return on the entire additional investment. If, in that case, a part of the cost of the changes is not met from earnings the tendency will be to so swell the capital account, as, in time, to make it necessary to charge higher rates.

Another purpose for which surplus earnings are needed is to make improvements which effect no economies, or which save less in operating expenses than they would add to fixed charges if their entire cost were charged to capital. "Some of these expenditures are for the elevation of tracks through cities, the elimination of grade crossings, the introduction of safety appliances, the electrification of roads entering the larger cities and the construction of elaborate, sometimes monumental, terminals. While the elevation of tracks, the elimination of grade crossings, the introduction of safety devices, etc., do somewhat increase the earning power of the road, in that the traffic is more easily and more rapidly handled, it cannot be said that this increase is anything like proportionate to the additional investment; yet the public demands these additions and betterments for their safety, comfort and convenience. It cannot be doubted that as a result of using income for additions and betterments the value of

a property is increased, although not always in the ratio of the cost."¹ The market value of the property usually is not increased in proportion to the cost of these improvements because usually the improvements do not increase net earnings in proportion to their cost. But if improvements that do not increase net earnings in proportion to their cost are made entirely from new capital, the tendency will be to so inflate the capitalization that earnings will become insufficient to pay a return on it unless a burden of higher rates is imposed on future generations.

Still another purpose for which net earnings in excess of interest requirements ordinarily are needed is to provide a fund for carrying the railway over periods of adversity. Suppose that the interest that must be paid is $3\frac{1}{2}$ per cent. and that the net earnings in good years are the same. In bad years, then, the earnings will fall short of the interest requirements; and if the railway has not a surplus to draw on, it will, if owned by a private company, be unable to pay a return and may become bankrupt, and if owned by the public will have a deficit that must be paid from taxes.

With these points in mind, the reader may understand better a part of the discussion in the chapter on "Cost of Capital." It was shown there that the average annual operating income of the railways of the United States during the four years ending June 30, 1911,—that is,

¹ Report of the Board of Arbitration "In the Matter of the Controversy between the Eastern Railroads and the Brotherhood of Locomotive Engineers," p. 41. This board was composed of Charles R. Van Hise, president of the University of Wisconsin; Albert Shaw, editor of the *North American Review of Reviews*; Oscar Straus and Otto M. Eidlitz of New York City; Frederick N. Judson of St. Louis; Daniel Willard, president of the Baltimore & Ohio Railroad, and P. H. Morrissey, formerly president of the Brotherhood of Railroad Trainmen.

the average amount they had left after paying operating expenses and taxes — was \$748,921,673, and that the net interest and dividends paid by them in 1910 amounted to \$680,000,000. It was estimated that the annual interest the government would have to pay on the bonds that it would have to issue to acquire the railways would be \$560,000,000. It was, therefore, estimated that the saving in the cost of capital under government ownership would be \$120,000,000 a year, which amount, if all other things remained equal, could be used for public purposes. It might be thought that the amount which really would be available for public purposes would be the difference between the estimated interest on the government's railway debt, \$560,000,000 a year, and the operating income, which in recent years has exceeded this by about \$200,000,000 a year. But if the entire difference between total earnings, on the one hand, and operating expenses and taxes, on the other, were really available under private management for interest and dividends the present owners of the railways, being desirous of realizing as much from their investment as practicable, would doubtless use it for these purposes. Now, of the \$221,901,659 which, after the payment of interest and dividends, the companies had available in 1910 for adjustments and improvements, they set aside almost \$58,000,000 for additions and betterments, and over \$117,000,000 for surplus, using the rest to cover deficits in the operation of weak lines and for miscellaneous deductions. If, under government ownership, the government either dissipated these funds by reductions in rates, or expended them for other than railway purposes, it would have to find in some other way money to apply to the purposes for which these funds are now used, or let the physical properties deteriorate.

It may be laid down as almost axiomatic that any railway system, whether private or public, whose reports do

not show that it is earning a substantial amount in excess of the return it pays on capital is really paying from capital expenses which should be defrayed from earnings. The private railways of the United Kingdom have followed the practice of paying to their stockholders practically all of their net earnings, and providing for obsolescence, many unproductive improvements and so on, from new capital. Largely in consequence of this they have accumulated a capitalization of about \$275,000 a mile on which it has become very difficult to earn even a low rate of interest.

It is necessary to keep in mind the foregoing considerations in order intelligently to analyze the statistics regarding the financial returns of railways, and especially of state railways. It is often said that the state railways of this or that country return to the public a "net profit" of 3, or 4, or 6 per cent. But by "net profit," when the term is thus employed, is usually meant merely net earnings. Now, if the net earnings are but $3\frac{1}{2}$ per cent. on the railway debt, and the interest that the government must pay on it is also $3\frac{1}{2}$ per cent., clearly the government must pay to its debtors all of the net earnings that it receives from the railways, and the public gets no net profit at all. On the contrary, it really suffers a financial loss by owning the railways; for if they were owned by private companies the public would at least get taxes from them; and the taxes that would be derived from the railways, if they were owned by companies, must, when government railways are unprofitable, be paid by others. The result is to increase the taxes that the people of the country in general must pay as much as if the railways had been left in the possession of private companies and their taxes had been remitted. The railways of the United States paid \$108,000,000 in taxes in the fiscal year ended June 30, 1911. If the government acquired them and they

did not thereafter earn their operating expenses, the interest on the debt incurred in acquiring them, adequate sums for additions, betterments and surplus, and also the equivalent of the taxes now paid by the companies, the result would be a net financial loss to the taxpaying public.

Service, rates and financial return are all factors of the railway problem. No one of these can be considered independently of the other two. The financial return of a system of railways may be low, and yet this may not be proof, or even evidence, of inefficient operation. It may be because the rates are low relatively to the unavoidable cost of operation and to the character of the service rendered. It is an important and often discussed question whether state railways can ever be justified in making their rates so low as not to earn at least their operating expenses and interest. This question is not essentially different from whether a government may be justified in so reducing the rates of private railways as to cause a deficit in their earnings, and then making the deficit good by subsidies raised by taxation. The development of commerce and industry is an object that should be sought by every government. Low rates—at least low freight rates—tend, other things being equal, to promote such development. It is sometimes concluded, therefore, that the fact that the making of low rates may cause a railway deficit is not an argument against making low rates.

Now, as to this matter one of two things is true. Either those who pay railway rates and those who pay the taxes which must be levied to make good a railway deficit caused by non-compensatory rates, are the same people, or they are different people. If they are the same people the non-compensatory rates do not benefit them, for all that they gain by the rates is taken back from them in increased

taxes. To the extent that the government incurs expense to collect and disburse the additional taxes there is a net economic loss. If those who pay the rates and those who pay the taxes are different people, then the former are getting their transportation for less than its total cost and those who are paying the rest of its cost in the form of taxes are paying for something which they are not getting. It may be said that while those who are made to pay the taxes thereby suffer direct injury they will enjoy more than compensating indirect benefits because the low rates will reduce the cost of conducting business operations; thereby the prices of goods will be reduced; and the taxpayers will benefit by the reductions in prices. But if shippers make reductions in their prices exceeding in the aggregate the reductions in their railway rates they will not gain, but lose, and their businesses will not be stimulated, but depressed. If they make reductions in their prices that just equal the reductions in their railway rates, neither they nor anybody else will gain anything by the lower rates. And if they do not reduce their prices an amount equaling the reduction in rates and the increase in taxes made necessary by it, it must follow that the taxpaying public will not gain as much indirectly as it will lose directly by the increase in its taxes. Undoubtedly under both private and state ownership there are cases where it is desirable to make rates temporarily representing less than cost in order to build up a traffic that later will be profitable. But usually the result of making unremunerative rates on state railways is to benefit the relatively few who travel and ship at the expense of the many who are taxed.

Having in mind the foregoing points, let us inquire into the financial results of some state railways. We have already seen that the service of the Prussian-Hessian railways is better than that of any other state railways, and

also that their rates are lower than those of any other state railways excepting those of Japan. They are likewise the most successful state railways financially. The percentage of their net earnings to their cost of construction has not in the last thirty years fallen below 4.86 per cent. In recent years it has always exceeded 6, and usually 7, per cent. In 1905 it was 7.52 per cent. In 1910 the net earnings were \$170,000,000, or 6.48 per cent. on the capital investment of \$114,000 per mile of line. "These extraordinary working profits, which in the aggregate amounted since the nationalization of the railways," says Professor Schumacher, "to a total of nearly 12,000,000,000 marks (\$2,880,000,000), have greatly benefited the Prussian State railways. They have enabled them to meet nearly the whole of the cost of construction (improvements?) of existing railways out of current revenue. In fact, one may say that all expenses necessary for the maintenance and preservation of railway property have been met out of the current revenue. This continual capitalization of the net profits has rendered unnecessary any writing off to make due provision for the maintenance of the property. The present aggregate value of the Prussian State railways not only equals, but exceeds, the whole amount of capital taken up on loan by the Prussian State for the purchase and development of the railway system."¹ Not only have the net earnings been sufficient to pay the interest on the railway debt and the cost of some additions and betterments, but large sums have also been derived from them which have been used for general governmental purposes. The aggregate amount turned into the public treasury for such purposes since the nationalization of the railways has exceeded

¹ "The Nationalization of Railways in Prussia: Its Causes and Sequels," by Professor Hermann Schumacher, a paper before the Royal Economic Society, London, Jan. 11, 1912.

\$720,000,000;² and the amount devoted to public purposes in 1910 was about \$50,000,000.

While the government has spent considerable amounts from earnings for improvements, there has been much complaint that the freight service provided has been inadequate. Almost annually for many years there have been serious shortages of freight cars. Shippers have also complained that the freight rates have been kept too high. When nationalization was under discussion Bismarck said that it would be the policy of the government to earn only enough to pay the working expenses and interest of the railways and to make certain improvements. Any additional earnings would be wiped out by reductions in rates. "The decisive role in the nationalization of the railways," said the Essen Chamber of Commerce in its annual report for 1907, "was the standpoint that the state lines would be made to serve in the first place economic considerations, that with their aid the economic forces of the country would be developed and a considerable impetus given to agriculture, industry and trade. Unfortunately, at that time no sufficient guarantee was obtained to insure the partition of the economic interests of the railways from the financial and fiscal interest of the state and to insure the expansion of the railways from an economic point of view. . . . Great difficulties are opposed to an extensive reduction of rates, chief among which is the close connection between the railway finances and the state finances. It is true that this relationship is somewhat more favorable than formerly, as to-day only about 35 per cent. of the state expenditure is covered by the railways, whereas in former years the percentage was 40 per cent. or even more. But the state is still so very dependent on the railways, and will be so for a con-

² *Ibid.*

siderable time, that this constitutes a really formidable barrier to any really effective reduction of tariffs."³

Furthermore, the \$50,000,000 turned into the public treasury by the Prussian-Hessian railways in 1910 cannot all be considered a net gain from public ownership. This sum was almost 10 per cent. of the gross earnings in that year. In the same year the railways of the United Kingdom paid almost \$25,000,000 in taxes, or more than 4 per cent. of their gross earnings, and the railways of the United States paid over \$108,000,000, in taxes, or almost 4 per cent. of their gross earnings. If the Prussian-Hessian railways had been owned by private companies, and the government had collected as much taxes from them in proportion as the governments of the United Kingdom and the United States did from the railways in these countries, it would have collected about \$21,000,000. Now, it is only the difference between the \$50,000,000 it actually got from the railways and the amount it would have got from them in taxes under private ownership, that constitutes the Prussian State's real financial gain from government ownership.

From whatever standpoint the matter be regarded, however, the conclusion must be that financially the Prussian State railways have been a brilliant success. In this respect they are one of the most successful large systems of railways, whether public or private, in the world. While their earnings in 1910 on a capitalization of \$114,000 per mile were 6.48 per cent., those of the private railways of the United States on a net capitalization of \$62,657 a mile were but 5.7 per cent., and those of the British railways on a capitalization of almost \$275,000 a mile, were but 3.59 per cent.

The state railways of Japan also appear to have been a

³ Board of Trade Report on the Railways of Germany, p. 129.

success financially. The average rate of dividend on the private railways in that country in 1904 was 8.2 per cent., and on the state railways 9.4 per cent. In 1906 the private lines earned 12 per cent. and one of the state railways 18 per cent.⁴ The government paid a fairly high price for the private lines; but it appears to have been operating them economically; and in 1911 the State railways earned 5.47 per cent. on a capital cost of \$411,598,253, or \$86,000 a mile; and the government is said to be making extensive improvements in them from their earnings.

When we turn from the financial results of the State Railways of Prussia and Japan to those of the state railways of most other countries we encounter facts of a different character. Even in Germany the lines owned by Prussia are the only government lines that are a financial success. "In the lesser German states," says Professor Schumacher, "the nationalization of the railways could not be carried out with a corresponding extensive consolidation of a large railway system. In their case the predictions made at the time by the opponents of nationalization with regard to Prussia have been verified. Nationalization has proved 'a bad bargain.' The state railways in Bavaria, Baden, Wurtemberg and Saxony yield only about one-half the rate of revenue yielded by the Prussian railways. Wurtemberg and Bavaria as a rule only yield enough to cover the interest on their national debts. Wurtemberg even shows a deficit on its railway working returns."⁵ Besides failing, on the average, to earn the interest on their railway debts, the lesser Ger-

⁴ "The Railways of Japan," by J. E. Slater, *Railroad Men*, May, 1913, p. 218.

⁵ "The Nationalization of Railways in Prussia: Its Causes and Sequels," by Professor Hermann Schumacher, a paper read at the Congress of the Royal Economic Society, London, Jan. 11, 1912.

man states lose the taxes that they would derive from the railways if they were in private hands. "To-day, therefore, they are face to face with the unpleasant alternative of either joining the great Prussian State railway system and partly abandoning their independence, or of continuing to pay for their independence by working at a loss."⁶

The financial situation of the state railways of Belgium is but little better. Their books were long so kept that they did not show their financial position. After protracted and animated debates in Parliament, mainly between 1901 and 1905, the railway administration surrendered to its critics and corrected its accounts from the beginning. It was then found that in 74 years (from 1835 to 1908) the State railways had earned their operating expenses and interest in 38 years and failed to earn them in 36 years. "The total profit since the beginning, as a matter of fact, was found to exceed the total loss by no more than 31,274,000 francs, or an average annual profit of 422,600 francs, on an average capital of 778,753,000 francs, a profit, that is, of 0.054 per cent."⁷ Nothing has been earned for obsolescence, unproductive improvements or surplus. Private railways in Belgium are subject to the same taxation as all other private companies, namely, on their profits. The state railways pay no taxes. Therefore, the public has lost whatever taxes it could have derived from them if they had been owned by private companies.

The Italian railways have been a financial failure under both private and public management. The bonds issued

⁶ "The Nationalization of Railways in Prussia: Its Causes and Sequels," by Professor Hermann Schumacher, a paper read at the Congress of the Royal Economic Society, London, Jan. 11, 1912.

⁷ From *Compte Rendu*, 1908, p. iv. Quoted in "The Belgian Experience of State Railways," a paper read by Professor Ernest Mahaim before the Congress of the Royal Economic Society, London, Jan. 11, 1912.

by the government to raise money to build and develop them bear interest nominally at 4 per cent., but have been sold at discounts which raise the actual interest to $4\frac{1}{2}$ per cent. In 1911 the net earnings of the railways were \$20,000,000, or 1.77 per cent., and their interest at $4\frac{1}{2}$ per cent. was \$50,000,000. On this basis the deficit that had to be paid by the taxpayers was \$30,000,000. Even if their interest be calculated at the conservative rate of 4 per cent. the deficit exceeded \$24,000,000.⁸

The old "State System," which has been operated by the French government for many years, has always been run at a loss; and its net earnings in 1910 were only 1.07 per cent. Under arrangements which have been outlined elsewhere, the French government has guaranteed the interest of the various large private railway companies and has also guaranteed them certain specified dividends. The government entered into this arrangement to encourage the building of new lines;⁹ and for years it made advances to all the large private companies. More recently all of the companies except the Western had begun to earn enough to enable them to stop calling for advances, and to begin to repay those previously made. The Western had not done so well; and its indebtedness to the government had become very heavy. It was largely owing to this that the government took it over in 1908. It was argued by the advocates of its acquisition that the financial burden that the state would have to carry for it would be less under public than under private ownership. This expectation has not been realized. In 1908 the Western's gross receipts were \$43,530,000, its working expenses \$29,600,000 and its charges \$19,050,000. It therefore fell short by over \$5,000,000 of earning its

⁸ The underlying reasons for the financial failure of the State railways of Italy have been indicated elsewhere. See p. 157.

⁹ For details of this plan see p. 22.

expenses and charges. Four years later, in 1912, under government management, its gross earnings had increased to \$48,900,000, its operating expenses to \$44,500,000, and its fixed charges to \$20,500,000. Consequently, its deficit had increased to over \$16,000,000. The government's estimate of the deficit in 1913 is \$17,350,700, an increase over that of 1908 of over \$12,000,000.

The Russian State railways failed in 1908 by almost \$35,000,000 to earn their interest. Both the Austrian and the Hungarian State railways are run at a loss. The net earnings of the Austrian lines were only 2.85 per cent. in 1906 and only 3.01 per cent. in 1907, being less in both years than the interest on the railway debt. In Hungary the state railways sometimes have earned more and sometimes less than their interest, but usually less; and in 1909 their net earnings fell short by \$8,944,000 of covering their interest and amortization charges.¹⁰

In recent years the reports of most of the state railways of Australia have been showing total earnings in excess of operating expenses and interest. The net earnings in excess of interest are referred to as "surplus" or "net surplus." The total miles of government railways operated on the continent of Australia in the year ended June 30, 1911, were 16,078. Their cost of construction was \$741,434,000; their total earnings \$86,385,000, and their working expenses \$53,502,000. Their net earnings, therefore, were \$32,883,000.¹¹ This was 4.4 per cent. on their total cost. Interest at $3\frac{1}{2}$ per cent. on their total cost would be \$25,950,000, leaving a net surplus of \$6,933,000. It has been estimated that, "taking the railways in the commonwealth as a whole, the net surplus over working expenses and interest on the capital for the last

¹⁰ "Management by State and Municipalities," by Yves Guyot.

¹¹ Statesman's Year Book, 1912, p. 289.

six years (ending June 30, 1911), has been over \$20,300,000,"¹² or about \$3,383,000 annually.

A closer examination of the accounts of the Australian railways will disclose that their recent financial results have not been so good as these figures would indicate. For example, of the capital invested in the railways of New South Wales up to June 30, 1911, \$2,963,000 was derived from "consolidated revenue"; and a footnote in the report of the Chief Commissioner of Railways says, "No interest is payable thereon." But, clearly, interest should be charged against the railways for all capital invested in them, for from whatever source it is derived, every part of it represents a sum by which the public debt either has been increased or could have been reduced, and on which the public is paying interest; and the interest thus paid is a part of the total cost of rendering the service of transportation. Deducting the annual interest on \$2,963,000 at $3\frac{1}{2}$ per cent. from the surplus reported by the New South Wales railways reduces their surplus from \$2,681,000, the amount reported, to \$2,578,000. Furthermore, the report shows that at the time it was made 300 miles of line were under construction in New South Wales. The interest on the cost to date of this mileage was not included in the interest on the railway debt. But the government was paying interest on the amount already spent on these lines; and this interest, whatever it was, also should be deducted from the reported surplus. Interest on lines under construction is just as truly a railway expense as interest on lines in operation. If all such proper

¹² "Australian Railways," by Hon. J. G. Jenkins, a paper read before the Colonial Section of the *Journal of the Royal Society of Arts*, London, May 21, 1912. Mr. Jenkins was formerly Minister of Works of South Australia; later Prime Minister of South Australia for four years, and subsequently Agent General of that colony in Great Britain.

readjustments in the financial figures reported by the Australian railways were made the reported surpluses doubtless would be somewhat reduced. Furthermore, the largest reported surpluses, those of 1911, amounted to but 8 per cent. of the gross earnings; and, as we have seen, the railways of the United States and Great Britain pay out 4 per cent. of their gross earnings in taxes.

Besides, it is only within recent years that the Australian lines have been earning their interest. The railways of New South Wales failed in thirteen out of the twenty-five years ending on June 30, 1912, to earn $3\frac{1}{2}$ per cent. on the investment in the lines under operation.¹³ Likewise, while the Victorian Railways show aggregate surplus earnings of \$5,800,000 during the eight years ending with 1911, they had an aggregate deficit during the immediately preceding seven years of over \$9,200,000, leaving a deficit for the fifteen years of \$3,400,000.¹⁴ The surpluses the Australian lines as a whole have had in recent years have not anywhere nearly paid the deficits they had in previous years.

The same thing is true of the neighboring state railways of New Zealand. Their accounts down to 1909 were thoroughly analyzed a few years ago by Professors James Edward Le Rossignol and William Downie Stewart.¹⁵ "The railway statement (of New Zealand), presented annually to Parliament by the Minister of Railways," say these writers, "does not recognize the existence of a deficit," "but shows a 'net profit on working,' so-called, without noting that it is always insufficient to pay

¹³ Report of the Chief Commissioner of the New South Wales Government Railways and Tramways, for the year ended June 30, 1912.

¹⁴ Report of the Victorian Railways Commissioners, for the year ended June 30, 1911, p. 39.

¹⁵ *Quarterly Journal of Economics*, Aug., 1909, p. 653.

interest on the cost of construction at the average rate of interest paid by the government on the public debt. In the year ending March 31, 1908, the railways earned a 'net profit' of 3.33 per cent. on £24,365,647, the cost of construction of the open (operated) lines, but since the average rate of interest paid on the public debt was about 3.7 per cent., the 'net profit' is absorbed in interest payments and a deficit emerges amounting to £89,349, if interest is reckoned on the cost of the open lines only. But the real cost of construction of the railway system, on which interest should be reckoned, includes the cost of the unopened lines, making a total of £26,735,140, reducing the 'net profit' to 3.04 per cent. and increasing the deficit £177,021. . . . Reckoning interest on the cost of the open lines only, the total deficit from 1895 to 1908 amounts to £1,134,447; from 1882 to 1908 it is £4,256,025 (\$20,000,000). Taking interest on the cost of the unopened lines as well, the deficit is increased by at least 50 per cent., or to \$30,000,000. In other words, the deficit of the New Zealand railways in the twenty-seven years, 1882-1908, was equal to more than 25 per cent. of their total reported cost of construction. In 1909 they earned only 2.13 per cent., leaving a deficit after the payment of interest. In 1910 and 1911 they earned small surpluses.

Canada has in the main followed a different policy from Australasia. It has left the development of railways chiefly in private hands, and has voted subsidies to encourage their construction. Up to 1912 it had made land grants to railways amounting to 56,052,055 acres. The Dominion and the various provinces and municipalities had also given cash subsidies amounting to \$208,072,073, and guaranteed interest on \$245,070,045 of railway investment. Interest at $3\frac{1}{2}$ per cent. on the cash subsidies alone is \$7,280,000 a year; and the taxes the gov-

ernment collected from the private railways in 1912 amounted to only \$2,200,528. As the very large mileage now under construction comes into operation the amount of taxes paid by the railways will greatly increase. But the government is not yet anywhere near getting back in railway taxes a return on its cash subsidies, and a business depression might force it to advance the roads large sums under its guarantees of interest.

Whatever may be the result of Canada's policy of subsidizing private construction and operation, its experience with government ownership and operation has been very unprofitable. The Intercolonial Railway, which is owned by the Dominion, and which had a mileage in 1912 of 1,463 miles, and represented a capital cost of \$94,746,291, has sometimes failed to earn its operating expenses, and never has earned its interest. Going back ten years, we find that in 1903 it failed by \$2,350,000 to earn its working expenses and interest at $3\frac{1}{2}$ per cent. It has steadily earned deficits ever since; and in 1912 its total deficit was over \$3,000,000.

The experience of Argentina with government ownership has been similar to that of Canada. While the private railways of the country are fairly successful financially, their net earnings in 1912 being 4.61 per cent. on their capitalization, the Argentine State railways, which have a mileage of 2,467 miles, are thus far a financial failure. Their capital cost to 1912 was \$91,321,147. Interest on this at $4\frac{1}{2}$ per cent. was \$4,110,000. This is a conservative figure, as the interest on Argentina's public debt varies from 4 to 6 per cent. The net earnings of the state railways were only one-third of one per cent., or \$301,400, leaving a deficit of over \$3,800,000 to be paid from the public treasury.

Reference has been made elsewhere to various instances where state and other governments in the United

States have entered on the construction and operation of railways, and to the financial results.¹⁶ Usually heavy losses have been incurred. There is one case which promises to become a marked and interesting exception. This is the case of the Cincinnati Southern Railway. Almost a half century ago some public-spirited citizens of Cincinnati, led by E. A. Ferguson, became convinced that the continued prosperity and growth of their city required that a railway be built southward from it. Private capital was indisposed to undertake the project. The city itself, therefore, determined to do so.¹⁷ After many difficulties construction to Chattanooga, Tenn., was finished in June, 1879. In 1881 the road was leased to the Cincinnati, New Orleans & Texas Pacific Railway Company, and it has since been operated by this company. The original lease, which was for 25 years, provided that the lessee should pay an annual rental of \$800,000 for the first five-year period; of \$900,000 for the second five-year period; of \$1,000,000 for the third five-year period; of \$1,090,000 for the fourth five-year, and of \$1,250,000 for the last five-year period. The lessee was also required to pay all taxes, charges and assessments, to make all repairs, improvements, renewals, replacements and additions, and to pay \$12,000 annually to the trustees representing the city to defray the expenses of the trust. In 1898 legislation was passed under which, in June, 1902, the lease was modified and extended to 1966. Under the modified

¹⁶ See p. 43 and also p. 122 for data regarding the financial results of government ownership of railroads in Georgia, Missouri, North Carolina, Pennsylvania, etc.

¹⁷ There is considerable literature regarding the Cincinnati Southern, including "The Beginnings of the Cincinnati Southern Railway," by H. B. Boyden; "The Cincinnati Southern Railway, A Study in Municipal Activities," by Professor J. H. Hollander of Johns Hopkins University, and "Founding of the Cincinnati Southern Railway, with an Autobiographical Sketch," by E. A. Ferguson.

lease the annual rental for the first 20 years is \$1,050,000; for the second 20 years, \$1,100,000; and for the last 20 years, \$1,200,000. It was also provided that the city should issue \$2,500,000 in bonds to be used for the provision of terminal facilities and permanent betterments. The lessee agreed to pay an additional rental equal to the interest on this amount and one per cent. per annum for a sinking fund with which to redeem the bonds issued to raise it.

The construction of the railway cost the city \$18,300,000; and formerly, as the bonds bore high rates, the rentals were insufficient to pay the interest. Gradually, by refunding operations, the city's railway bonded debt, and also the interest rate on it, were reduced. Meantime, the lessee invested almost \$9,000,000 in additions and betterments. Consequently, in 1911, the city had a railway debt of \$14,932,000 on which it paid \$568,335 interest, while it owned a property which had cost a total of \$29,507,153, and from which it received a rental of \$1,105,150, leaving it an annual surplus of \$536,815. The actual value of the property is believed to be about \$40,000,000. The total interest paid by the city up to December 31, 1911, exceeded the total income that had been received by it from the railway by \$8,250,950. But as this deficit is being reduced by over \$500,000 a year, doubtless it will be extinguished before the present lease expires. In that case the financial results will have proved advantageous to the city.

The foregoing reviews the financial results of some of the principal state railways of the world. The Prussian and Japanese lines are the only state railways mentioned which have been financial successes; and they appear to be almost the only state railways in the world which over a considerable period have steadily earned their operating expenses and interest and a surplus. The British govern-

ment derived a surplus of \$31,000,000 from the state and guaranteed lines of India in 1912, but only part of this was from the state lines, which often have had a deficit. It is a disputed question whether the Swiss state railways have, on the whole, had a net profit or a net deficit.¹⁸ The state railways of practically all other countries are financial failures, even if it be assumed that railways owned by the public should earn only their operating expenses and interest.¹⁹ If in order to be a financial success state railways should earn something with which to offset obsolescence and make improvements and also the equivalent of the taxes they would be required to pay if they were in private hands, then the number of state railways that have been a financial success is extremely small.

There are several reasons why the state railways of Prussia and Japan are a financial success while those of

¹⁸ See the discussion of this question by Professor A. N. Holcombe in "The First Decade of the Swiss Federal Railways," in the *Quarterly Journal of Economics*, February, 1912.

¹⁹ Regarding the financial results of the state railways of Europe, Professor Ernest R. Dewsnap of the University of Illinois has written: "Generally speaking, the results have been poor. For instance, in 1907, quite a favorable year for railway traffic, the state systems of Europe, excluding Prussia and Saxony, earned possibly 3 per cent. upon their reputed capitals. Thus France (*Pancien réseau de l'État*) made 1.87 per cent., Italy, 2.18, Norway, 2.64, Sweden, 2.75, Denmark, 2.92, Württemberg, 2.47, Austria, 3.01, Belgium, 3.29, Bavaria, 3.45, Hungary, 3.50, Imperial Railways of Alsace-Lorraine, 3.58, Switzerland, 3.62, Baden, 3.90 per cent. In 1908, when the effects of the economic depression which commenced in the United States in the fall of 1907 really began to be felt, the average return fell considerably below 3 per cent. Such results indicate that most of these railways—on a proper representation of capital, probably all of them—were actual burdens upon the finances of their respective states, for the latter have usually had to pay from $3\frac{1}{2}$ to 4 per cent., or even more, for the necessary capital."—From a paper read before the American Economic Association, Dec., 1910, at St. Louis, Mo.

practically all other countries are financial failures. Other things being equal, the financial success of a system of railways will be determined by the efficiency with which it is operated. The efficiency with which state railways will be operated depends on the efficiency of the government that owns them. Now, the Prussian and Japanese governments are among the most efficient of contemporary governments in accomplishing the objects that they set before themselves; and one of the objects they have steadily sought is the economical operation of their railways. Of the first importance is the fact that the military régimes of Prussia and Japan have enabled them to get more efficient service from their labor than the managements of most state railways can.

The Prussian government, besides being an efficient government, is what is familiarly called a "strong" one. In other words, it is an autocratic government. Its executive department is not greatly affected by the results of elections. Its railways being run entirely by its executive department, neither is their management affected by the results of elections. The management is stable, and not subject to political influence, either from labor, seeking advances in wages and easier conditions of employment, or from shippers, seeking reductions in their freight rates. The attitude assumed and the tone taken by the Prussian government were well illustrated by some remarks made by the Minister of Finance (von Miguel) in a debate in 1899. "This one," he said, "will have cheaper fares; another will have better carriages and more room; a third will have new lines, even though they should be unremunerative. This one again wants better and finer stations; that one improvement of the road; another lower rates. . . . In all this lies a danger to the state—at least, there would be if the government were not strong enough to oppose occasionally the desires of

those interested. . . . I assume that we Prussians will always have a strong administration."

While the management of the railways in Prussia is not subject to political influence, the levying of taxes is. The government must go to Parliament for taxes. The people are already heavily taxed; and the need for public revenue has grown steadily and rapidly. The government could go to Parliament for all the needed additional revenue; or it could get a large part of it by increasing the net earnings of the railways. It has been easier under the conditions existing so to manage the railways and make their rates as to get a large part of the needed additional revenue from them, than to get all of it by increased taxation; and the government has followed the line of least resistance. Railway rates are not taxes. But a government which owns railways can raise what are in effect taxes by keeping the rates of the railways unnecessarily high.

Most governments are less efficient than those of Prussia and Japan. This relative want of efficiency in government may be found in monarchies as well as in democracies—in Russia as well as in France. Neither efficiency nor inefficiency is a necessary attribute of any one form of government. In the management of commercial enterprises, however, democracies have one great disadvantage as compared with autocracies. As a government becomes more democratic, the play of political influences increases, and the essence of the political influences here referred to is that they often are exerted not by and in the interest of the whole people, but by and in the interest of certain groups of the people. As the late W. E. H. Lecky said, with universal suffrage the art of politics requires each candidate to become a competitive bidder for the support of as many as possible of those groups into which the interests and opinions of mankind

divide every society. One group seeks protection for manufactures; another legislation in the direct interest of labor; another the development of waterways or low railway rates in the interest of shippers; and so on. Now, in democratic nations which own their railways, there are two large and well defined groups which constantly bring political pressure to bear to cause the railways to be so managed as to promote their special real or supposed interests. One is the group composed of railway employes, which seeks increases in wages, shorter hours and easier conditions of work. In most countries, this group is organized into unions which enable it to press its demands with the maximum effectiveness. The second group referred to is that which pays rates and which constantly uses pressure to get them reduced. As it is a popular and plausible theory that state railways should not earn more than their working expenses and interest, or even not so much as that, the pressure from one or both of these groups, when the earnings exceed, or even approach, this amount, is likely to be irresistible. In these circumstances, the relative inefficiency of the management and the pressure from the labor group tend to make the cost of operation comparatively high. At the same time the pressure from those who pay rates tends to make the rates low in proportion to the relatively high expenses. The result is the financial loss which usually emerges.

In view of the foregoing facts and considerations, it seems reasonable to conclude that if the United Kingdom and the United States, under their present conditions, should nationalize their railways the financial results would be unlike those gained by Prussia and Japan, and more similar to those sustained by France, Belgium, Australasia, and Italy, and by Canada with the Intercolonial. There are monarchical nations that have lost money on

their railways, but there does not seem to be any democratic nation that has long made money on them. The United Kingdom already has had a financial experience with its State Telegraphs similar to that of most countries with state railways. Up to March 30, 1906, the sums paid by the British government in unearned interest on the investment in the State Telegraphs totaled \$22,500,000; and the aggregate deficit has continued to increase up to the present time.²⁰

On March 17, 1913, a deputation representing the Railway Clerks' Association of Great Britain waited on Prime Minister Asquith and presented to him an argument for nationalization of railroads. Its spokesman estimated that, as the government could borrow money at a lower rate than is now paid on the capital of British railways, the government could, by nationalizing the railways, save from \$15,000,000 to \$30,000,000 of the return on railway capital. The Prime Minister replied: "I am quite sure that any operation of a financial character carried out on reasonable and equitable terms in the direction that you desire would be followed by very large demands from two entirely different quarters—on the one hand, from traders for better rates; then on the other hand, from the railway workers for better wages and conditions; and all that prospective improvement in net receipts which Mr. Walkden (the spokesman of the Railway Clerks' Association) has been forecasting and which very likely may come under existing conditions, would be more than swallowed up before the railways had been in the possession of the state a twelvemonth. These facts you cannot leave out of the question from the point of view of the taxpayer and the general community."

What Prime Minister Asquith said regarding national-

²⁰ See p. 150.

ization in Great Britain is applicable in the United States. There is constant pressure now on the railway managements of this country for higher wages and easier conditions of work. In spite of all the resistance the companies can offer these demands are largely successful. Some of the easier conditions of work that employes have not been able to get directly from the railway managements they are getting or have got by state and national legislation, such as that limiting hours of work and increasing the number of men that must be employed in train crews. It cannot be assumed that, unless there should be a revolutionary change in the form and substance of government in this country, a state railway management could and would resist the pressure of railway employes for concessions that would increase railway expenses as stubbornly as the private managements do. Even if it did the employes, with their organized voting strength, could put a tremendous pressure on the law-makers and other elective public officials.

As to rates, at present the railway managements can resist reductions to an unremunerative point by appealing to the public's sense of justice to investors and to its selfish interest, which is to have the companies earn enough to enable them adequately to develop their facilities. If this appeal is ineffective, the railways can petition the courts to set aside noncompensatory rates on the ground that they are confiscatory. If the government owned the railways, neither of these means of preventing excessive reductions could be used. It would be contended that low rates stimulated commerce and industry. The only reply that could be made would be that rates that were unremunerative would impose a burden on the taxpaying public; and arguments based on the rights and interests of the taxpaying public usually have not sufficed to keep state railways from incurring deficits.

It would not require very great changes in rates and in the wages and conditions of work of employes to convert the surplus earnings of the railways of the United States into a deficit. As has been estimated in a previous chapter, probably the government could not acquire the roads for less than \$16,000,000,000, and would have to pay at least $3\frac{1}{2}$ per cent. interest on the debt. If, then, the average net earnings should be as large in proportion as they have been during the last six years, the government would receive the equivalent of the taxes the private railways have paid, and in addition 4.7 per cent. on its investment, or a net profit over interest of 1.2 per cent. But, if there should be a reduction in rates of only five per cent. and an increase in operating expenses of only five per cent. the net earnings would be so reduced that the taxpayers of the United States would be \$115,000,000 a year worse off than they are now.

CHAPTER XVII

CONDITION OF LABOR

THE safeguarding of the rights and the promotion of the welfare of that large majority of its people who work chiefly or entirely with their hands is the main duty of every nation. One of the arguments often made for government ownership of railways in the United States is that it would tend to benefit the laboring classes. The government, it is said, would grant railway employes easier conditions of work and pay them higher wages. This would be directly advantageous to the 1,700,000 railway employes and their families. It would also, it is argued, be indirectly advantageous to other working people; for the example set by the government, and its competition with other employers, would cause other employers to improve the conditions of work and raise the wages of their labor. Thus, the situation of labor in general would be improved.

It is probable that in one respect the adoption of government ownership would operate to the disadvantage of the men who enter railway service in the lower ranks. It is quite likely that it would reduce their opportunity to rise to official positions. In the past a very large majority of those who have reached the higher official positions have been men who have begun railway work as telegraph operators, conductors, brakemen, firemen, station agents, clerks and so on. Men of ability have been advanced from every class of railway employes, because promotions have been in the hands of the active managers

of the properties, who have been more competent than anybody else possibly could be to judge of the fitness of the various employés for advancement, and who have not been hampered by arbitrary regulations in selecting those to be advanced. The labor unions insist on observance of the principle of seniority in promotions in the ranks of the employés themselves. Their insistence on this principle probably would be more effective under government management; and the more strictly seniority is observed the less chance is there for the abler men among employés to rise to high places in their crafts while they are still young enough to be promoted to subordinate official positions or to rise high afterward even if they are promoted to such positions. Aside from this, the managers of state railways could not exercise the same wide discretion and unrestricted judgment in selecting men for promotions as can those of private railways. If there were not strict civil service rules which were strictly enforced, the managers would be subjected to irresistible pressure for the promotion of men for political reasons. If there were strict civil service rules which were strictly enforced, promotions would not be made according to merit to the same extent that they are now, simply because no civil service rules ever have been or ever can be devised the examinations under which will determine the fitness of men for such work as that done by railway officers so well as will the expert, untrammelled and impartial judgment of those who have themselves had training and experience in that work. The most important function of most railway officers is the handling of men; and a conductor or train despatcher might pass a very poor civil service examination, and yet be the very best man available to promote to trainmaster, and later to superintendent and general manager. Public ownership seems to present only the alternatives of promotions for political reasons, or the

creation of an employé caste from which men seldom would rise to official positions and an official caste recruited from those who could pass civil service examinations with credit.

Reflection would suggest that the way the employés of a system of government railways will fare in respect of their wages and working conditions is likely to depend largely on the character of the particular government. Management and employés, whether the ownership be public or private, are sure to be very human. Therefore, the employés are sure, at times, to ask for working conditions and wages which the managers will think it would be unreasonable to grant. Consequently, how much the management of a government system of railways will grant will depend largely on its general attitude toward the working class, and on how much strength it will be disposed and able to put forth to resist demands that it considers unreasonable. The effective resistance it will be disposed and will be able to offer will depend, in turn, largely on the degree of its responsibility to the voters of the nation, and on the means adopted by the employés to enforce their demands. Where the suffrage is limited, and the executive department of the government is not dependent for its tenure on the results of elections, the employés will be less able to use political pressure, and the government will be more able to resist it, than where there is manhood suffrage, and the executive department of the government may be turned out by an adverse result at the polls.

It might be assumed that a monarchical military régime would also be able to resist pressure applied through strikes with proportionately greater effectiveness than a democratic government. But democracies as far apart as France and Australia have at times shown unexpected disposition and capacity for swiftly applying irresistible

force for the suppression of strikes on state railways. Victoria in 1903 suppressed with remarkable celerity a strike of the enginemen and firemen on its state railways; and France in 1910 promptly struck down with the mailed fist a strike of employés on both the state and private railways. Government ownership does not prevent strikes. But in democratic countries under government ownership strikes are more likely to incense public opinion against the strikers than they are under private ownership; and when public opinion in democratic countries is fully aroused nothing can resist it. It is probable that public ownership reduces the effectiveness of the strike in both monarchies and democracies. But in democracies the increased opportunity to apply political pressure that public ownership gives railway employés is usually more than an offset to the reduction in the effectiveness of the strike, while under strong monarchical governments it is not. It would seem, therefore, that a change from private to public ownership would be likely to affect the position of employés of railways more under democratic than under non-democratic conditions.

Other things being equal, employés are more able to protect their rights and enforce their demands when they are organized than when they are unorganized. The German government is one of the least democratic in the world; and one of the consequences of this is its policy of discountenancing trade unions among its railway employés. As previously shown, the employés are allowed to form committees through which to negotiate with the railway administration; but they must be formed and must act under strict regulations issued by the government and under the close, detailed supervision of the officers of the railways; and the various committees cannot act concertedly, or even meet together, without express permission. They are, therefore, powerless to call

a strike or to apply any considerable pressure to secure from the railway administration anything it is indisposed to concede.¹ The Belgian government also forbids its railway employés to belong to unions or to go out on strikes.² But most state railways do not thus discountenance unions among their employés. In Austria-Hungary there are workmen's committees similar to those in Germany, which to some extent take the place of unions. In France the employés of both the state and private railways are organized. On the state railways there are conciliation boards composed of representatives of both the management and the employés, which see that the laws and regulations regarding hours of work, rest, etc., are observed. The employés of the state railways are also represented on committees which prepare the premium and bonus lists and on other committees which administer the pension fund. The French private railways do not have conciliation boards similar to those on the state railways; but they, like the state railways, deal with deputations representing the employés' organizations.

The employés of the private railways of Great Britain, the United States and Canada, are strongly organized; and in Canada and the United States their unions are formally and fully recognized by the companies, and the "schedules" fixing wages and conditions of work are drawn up in conferences between the officers and representatives of the employés.

The principal change in their conditions of work that laboring people commonly seek is the reduction of their hours of labor per day. The evidence shows that government ownership seldom affects hours of labor on railways. In most countries where there are both state and

¹ Board of Trade Report on the Railways of Germany, p. 143.

² "Aspects of Public Ownership," by Sidney Brooks. *North American Review*, May, 1912, p. 655.

private railways, the hours of labor are fixed by government regulations which apply to both classes of lines.

The usual working day on the railways of the United States is ten hours. Clerks in minor offices at small cities and towns are commonly on duty this long, but in general offices in cities they usually work only eight or nine hours. Formerly many telegraph operators worked 12 hours, but under the federal hours of service law they cannot now be kept on duty more than nine hours in each twenty-four. Consequently, they usually work eight-hour shifts. Station agents who are also telegraph operators work the same hours. Track labor, which is about one-fourth of all, ordinarily works 10 hours; and this is the usual working day in shops. For employes engaged in train service—enginemen, firemen, conductors, brakemen and flagmen—either 10 hours, or a run of 100 miles, is a day; and if either is exceeded, overtime is paid. The federal hours of service law prohibits any employe concerned with the operation of trains from being kept on duty more than 16 consecutive hours, and no such employe who has been on duty 16 hours in the aggregate in any 24-hour period may be required or permitted to go on duty again until he has had at least eight consecutive hours' rest.

On the railways of Belgium, including those of the State, 12 hours is the standard working day for station employes and laborers in the track department. "This period may vary up to a maximum of 14 hours for inspectors and watchmen, whether they are in the stations or on the open line. . . . Employes in the locomotive department work on the average ten hours whether they are in the work shops or stations. . . . The chief guards (conductors), guards (brakemen), and train crews have 13 hours on duty. They are, however, supposed to

have eight hours of uninterrupted rest at their homes."³

The hours of work on the state and private railways of France are the same, both being regulated by decrees of the Minister of Public Works. The maximum working day of signalmen, gate-keepers and track employes is 12 hours. As to engineers and firemen, "the average daily hours of work must not exceed 10 hours, and the hours of rest shall also amount to at least 10 hours, so that during nine consecutive days, counted from midnight to midnight, the hours of actual work do not exceed 90 hours and a corresponding period of rest is obtained. Each period of work must take place between two periods of rest, separated by an interval of not more than 17 hours, which interval may not contain more than 12 hours of actual service." In the case of other employes concerned with the safety of the line, "the average daily hours of work must not exceed ten hours and the hours of rest shall also amount to at least 10 hours, so that the hours of work during 14 consecutive days, counted from midnight to midnight, shall not contain more than 140 hours of actual work and must contain a period of rest at least equivalent to 140 hours. The interval of time between two uninterrupted periods of rest shall not exceed 17 hours, and this period shall not contain more than 12 hours of actual service."⁴

On the Austrian and Hungarian state and private railways the hours of duty of telegraph operators "where the forwarding of telegrams is not considerable and affords time for enough intervals," may be 18 hours, and the period of rest 12 hours. Where the forwarding of telegrams is continuous, the hours of duty are from 12 to 16 hours, followed by a like period of rest. Practi-

³ Board of Trade Report on the Railways of Belgium, p. 76.

⁴ Board of Trade Report on the Railways of France, p. 214.

cally the same rule applies to signaling and station employés. The hours of duty of train crews must be so arranged that ordinarily the monthly average shall not exceed eleven hours per day. The average may, however, be increased to 16 hours per day on local railways. In busy traffic continuous duty may not exceed 14 hours, but the hours of duty on local passenger trains and on main line freight trains may be as much as 18 hours.⁵

On the state railways of Italy the regular day of station employés is 10 hours when the nature of the work is important, and 12 hours when the work is of an ordinary character. The maximum period of duty is 17 hours. The average daily duty of train employés must not exceed 11 hours, and their maximum hours of service ordinarily must not exceed 15 hours. In the case of engineers and firemen, the average duration of daily duty must not exceed 10 hours, and the total period on duty between two periods of rest must not exceed 17 hours.⁶

In Germany the station staffs work 10 or 12 hours, according to the size of the station; watchmen, 14 hours; conductors and brakemen, ordinarily eleven hours, with a maximum of 16 hours; engineers and firemen, ordinarily either ten or eleven hours, according to their runs, with a maximum of 16 hours.⁷

It will be seen that the hours of work on the railways of the United States are, on the whole, less than on the state and private railways of Europe.

As to the intensity of the labor required from and done by employés, it is likely to be greater under private than under public management. As has been shown else-

⁵ Board of Trade Report on the Railways of Austria and Hungary, p. 93.

⁶ Board of Trade Report on the Railways of Italy, p. 277.

⁷ Board of Trade Report on the Railways of Germany, p. 141.

where,⁸ when railways are transferred from private to public ownership, there is almost invariably an increase in the number of employés; and under similar conditions state railways ordinarily employ more men than private railways. This must mean that on the average, the individual employé on the latter is required to do more work than on the former. Indeed, it is one of the common complaints against capitalistic employers that they work their employés harder than governments do.

In considering whether, ordinarily, under similar conditions, state railways or private railways do pay or are likely to pay the higher wages, the difference between nominal and real wages must constantly be borne in mind. Wages are always stated in terms of money. But money wages are not real wages. Real wages are the amount of necessities, comforts and luxuries that the worker can buy with the money he receives for his work. Since the amount of food, raiment and shelter that can be bought with a wage of \$1.00 a day varies widely in different countries, and even in different parts of the same country, a wage of \$1.00 a day is a very different real wage in some parts of the world from what it is in other parts. The measure of a workman's real wages is the ratio between his money wages and the normal cost of living of those in his station in life in the place where he must spend his money wages.

Now, the cost of living is much higher in the United States than in Europe. It is estimated that in the various parts of this country it is from 25 to 65 per cent. more than it is in the various parts of Western Europe. The differences in the money wages of railway employés are still greater. The wages paid by the railways of the United States are from 80 to 160 per cent. greater than

⁸ See p. 131.

the wages paid by the railways of the United Kingdom, France, Germany and Austria-Hungary. For example, the average daily wage on the state railways of Prussia-Hesse in 1910, including dwelling allowances, premiums for the economical use of fuel and supplies, and various other small allowances, was slightly over \$1.00,⁹ while on the railways of the United States it was \$2.14. Therefore, the real wages of the employés of the railways of the United States are much higher than those of the employés of either the private or state railways of Europe.

The average money wage of railway employés is also much larger in the United States and Canada, where private management preponderates, than in Australasia, where the railways are owned by the government, although, doubtless, there are also substantial differences between the cost of living. The average wage in the United States in 1911, was \$706; in Canada, in 1912, \$606; in New South Wales, in 1912, \$525.

The average wage on the state railways of Germany seems to be somewhat greater in proportion to the cost of living than the average wage on the private railways of the United Kingdom, but somewhat less in proportion than on the private railways of France. The average wage on the Belgian state railways is very low. When railways have been transferred in recent years from private to public ownership, increases in wages usually have been made.¹⁰ But, meantime, advances in wages have also been made on private railways, and nowhere have

⁹ Professor W. J. Cunningham estimates the average daily wage of the employés of the Prussian-Hessian State railways at \$1.17, and doubtless this is approximately correct. But some other capable statisticians who have carefully analyzed the data place the figure a little lower.

¹⁰ See p. 131.

the advances been larger in proportion than those made by the railways of the United States. However, it is significant that where there are state and private railways in the same country, it is often found that the state railways pay a somewhat higher scale of wages, and seldom or never found that the opposite is the case. The German private lines are believed to pay somewhat lower wages than the state lines, although because of the smallness of the private lines this has no great significance. In Austria-Hungary wages on the state railways usually have been somewhat higher than on the private railways, but "day by day the disparity becomes less and less marked. The private railways recognize that the position of party politics necessitates that the pay of their men shall approximate to the pay of the staff on the state lines. Otherwise, continual dissensions must arise."¹¹ There is no question that wages on the state railways of France, since recent advances in them, are higher than on the large private railways. Furthermore, state railways sometimes make arrangements with their employés that indirectly increase their compensation. For example, on the French state railways "certain sums of money are distributed annually as premiums on thrift and good management to employés who have been judged to have contributed to the good working and results of the traffic. These annual sums may not, however, exceed 2 per cent. of the gross earnings of the year."¹²

It is an interesting fact, in this connection, that both the private and state railways of some European countries pay various forms of premiums and bonuses to employés in the station, train and other services who render more than ordinarily efficient labor. In the United

¹¹ Board of Trade Report on the Railways of Austria and Hungary, p. 84.

¹² Board of Trade Report on the Railways of France, p. 202.

States the railway labor brotherhoods offer strong opposition to all schemes which tend to raise the compensation of any employé above that of other employés in the same class. It is significant, in view of the character of the Prussian government, and the nature of the Prussian railway organization, that the average wage in Prussia is lower than it is in any of the other German states.

As in the United States, the United Kingdom and Canada, railway employés are citizens and voters, and most classes of them are organized, it seems quite probable that their transfer to the government service would enable them to press more effectively for the various concessions that they demand. Under private ownership, the companies strongly resist all unreasonable demands of employés, and many that are reasonable. Under these conditions the government and public can act directly or indirectly as umpires, securing to the employés what they deserve, while leaving to the companies opportunity to adopt the rules and enforce the discipline necessary to get efficient work. Under public ownership the government would cease to be an umpire, and would become a party. Even though the attitude of the employés might be unreasonable and their demands excessive, there would be many public men who would lack the disposition or courage steadily to oppose so large a body of voters. That railway employés would get easier conditions of work and somewhat higher wages under government than under private ownership in the United States, and also in the United Kingdom and Canada, therefore, seems probable. Indeed, the experience of Canada with the labor on the government-owned Intercolonial Railway, and of England with the labor employed on the British State Telegraphs, is somewhat similar to that of most governments that have tried public ownership on a large scale.

Is the fact that under government ownership railway

employés probably would be given easier working conditions and higher wages an argument, from the standpoint of the public welfare, as is commonly assumed, in favor of the adoption of that policy? It may be observed in this connection that the reasoning in favor of Socialism as a means of improving the condition of the working class in general is supported by entirely different premises from reasoning intended to show that government ownership of any particular concern or class of concerns would benefit working people in general. Under Socialism, all of the means of production, distribution and exchange would be owned by the public, and all of the people would work for the public. Therefore, a change from the capitalistic system to the Socialistic system doubtless would have similar effects on all working people. On the other hand, government ownership of railways or of any other particular class of large concerns, has wholly different effects on the employés of the concerns nationalized from what it has on the much more numerous employés of the much larger number of concerns that remain in private hands. In this case, it is only indirectly that the large majority of the people are affected. Now, the results, whether direct or indirect, that any political or economic change will have for a large majority of the people should usually be given much more consideration and much more weight than the results, whether direct or indirect, that it will have for a minority of the people.

There seem to be only four ways in which the real wages of labor can be increased in any industry without increasing the total cost of production in that industry. The average real wage may be increased without causing any increase in the cost of production by getting each individual worker to do a larger amount of productive work. It is not probable that this means of increasing real wages

would be adopted under government ownership of railways in this country. On the contrary, governments usually employ more men to do a given amount of work than companies. A second means by which the average real wage paid can be increased without increasing the cost of production is by introducing labor-saving machinery, the interest on the fixed investment in which is less than the wages of the labor that it saves. But it is not at all likely that under government ownership of railways labor-saving machinery would be introduced more rapidly than under private ownership. A means by which the average real wages of labor in an industry can be increased without either an accompanying reduction in the number of men employed in it, or an increase in the cost of production, is by introducing economies in the purchase and use of materials and equipment, and transferring to labor the savings thus effected. But the preponderance of the evidence indicates that the managements of private industries are more diligent and successful in effecting economies and avoiding preventable wastes than the managements of industries owned by the public. The fourth way in which the real wages of labor may be increased without any increase in the cost of production is by transferring from the owner of the enterprise to the employes part of the earnings that have been going to the owner. Under government ownership of railways in the United States, the real wages of labor might thus be increased. What would be the results for the public of doing so? -

Under government ownership the public is, of course, the owner of the railways, and has to pay the interest on the railway debt and the operating expenses of the railways either from their earnings or from some other fund. It is probable that the interest the American public would have to pay, at least before it had made large expendi-

tures for improvements and extensions, would be less than the total return that the railway companies of the United States now pay on their capital. If, then, the total earnings and the operating expenses remained relatively the same as they are now, the public, after paying interest and operating expenses, would have left a surplus which it could use for any purposes it saw fit. The public would be assuming the risks and responsibilities of ownership and management, and these surplus earnings might be retained by it as its reward for assuming these risks and responsibilities. If the hours of railway employes were reduced, or any other changes were made in their conditions of employment which resulted in them doing less work on the average than at present, and no corresponding reduction were made in their wages, there would be an increase in operating expenses. Likewise, if wages were increased without any corresponding increase in the average amount of work done by employes there would be an increase in operating expenses. If in either or both of these ways operating expenses were increased by an amount just equaling the public's saving on the cost of capital, then, directly at least, railway labor would get all of the financial benefit resulting from the change from private to public ownership.

If changes were made in the conditions of work or wages of employes, or both, which caused an increase in operating expenses exceeding the total saving in the cost of capital, one of two results would necessarily follow. If the rates charged and the gross earnings derived from them were not increased, the total earnings would become insufficient to pay interest and operating expenses. There would be a deficit, and the public would have to meet this deficit, for which purpose the people would have to pay more to the government in taxes. On the other hand, if passenger and freight rates were increased

enough to prevent the railways from incurring a deficit, part of the burden of the greater cost of railway labor would be borne by those who paid the rates. As a matter of fact, as shown previously, if any considerable improvement were made in the conditions of work of railway employes, and any considerable advance were made in their wages, there would result an increase in operating expenses that would greatly exceed the maximum economy in the cost of capital which it is conceivable could be made under government ownership.

What classes would be affected by any changes in taxes and rates that might result? As to taxes, in the long run they fall chiefly on the middle and working classes, including railway employes themselves. These classes already pay more than their fair share of taxes on property. And they pay the great bulk of indirect taxes. They pay internal revenue taxes every time they smoke a pipe of tobacco or drink a glass of beer. They pay customs duties on a large proportion of all the commodities that they consume. In other words, the producers of and dealers in commodities of general use pay directly the taxes on them, and then add the taxes to the prices of their goods; and thus the ultimate consumer of the goods usually becomes the ultimate payer of the taxes. Likewise, the middle and working classes pay directly a large part of the passenger rates, and indirectly — in the form of portions of the prices of the goods which they consume — the greater part of the freight rates. Consequently, improvements in the working conditions of railway labor, or increases in its wages, which tended to increase railway operating expenses, and thereby the passenger and freight rates that the railways would charge or the taxes that the government would levy, would ultimately fall chiefly on the masses of the people.

On what ground could improvements in the conditions

of work and advances in the wages of railway labor, or of any other special class of the people, which would thus put a burden on the public, including the working class in general, be justified? Only, it would seem, on one ground, viz., that the conditions of work of the special class benefited were less favorable and its wages lower in proportion than those of working people in general. Now, there are some classes of railway employes in the United States, such as section foremen and station agents, who are unorganized, and whose conditions of work are relatively hard and whose wages are relatively low. But the opposite is true of a large majority of railway employes. Track labor is unskilled; and as its wages are fixed where they will attract unskilled labor from other industries, it probably is as well paid as other unskilled labor. Locomotive engineers, firemen, conductors, trainmen, machinists and other organized employes are, in respect of conditions of work and the wages that they receive, among the most favorably situated workingmen in this country. Their employment is hazardous; but this fact is now taken into account in fixing their wages. Therefore, there could be no justification for imposing a burden on the general public for the benefit of a large majority of railway employes.

It may be said, however, that the example set by the government, and its competition with other employers of labor, would cause the latter to make concessions to their employes similar to those the government made to railway labor, and that, therefore, the entire working class would be indirectly benefited by government ownership. But most employers are not influenced materially by the example set by other employers, including governments, in dealing with labor. "Business is business" with most business men, and they make only the reductions in hours and the increases in wages that economic conditions and

labor unions oblige them to. As to whether the granting of easier conditions of work and higher wages by the government to railway employes would, for competitive reasons, tend to cause other employers to do likewise, that is a more doubtful point. Under conditions of untrammelled competition, the supply of and demand for labor chiefly determine its wages. But under modern conditions such untrammelled competition seldom exists. There are combinations in restraint of competition among both the capitalists who buy labor and the workers who sell it. Labor may be roughly divided into two classes. One class is unorganized and competitive; the other, organized and relatively non-competitive. The station agents, clerks and track labor of railways belong to the former class. There is often a shortage of track labor. If the railways, under government ownership, paid higher wages for unskilled labor, they would attract more of it, which would force other employers to offer it more. A somewhat similar effect might be produced by increases in the pay of station agents and clerks, although the effect would not be so great in proportion, because the government's demand for such labor could not be so great in proportion as we may assume its demand for unskilled labor would be.

A large majority of railway employes, including engineers and firemen, conductors, trainmen, machinists, and so on, belong to the organized and relatively non-competitive class of labor. By the most skillful and aggressive methods of labor unionism they already have succeeded in getting their wages on a higher basis than those of most other skilled labor. The supply of candidates for employment in their crafts therefore usually equals or exceeds the demand. An increase of their wages would not, therefore, increase the effective demand for labor in the railway business. As it would not increase the ef-

fective demand for labor it probably would have little or no effect on wages in other lines of employments.

Suppose, however, that increases in the wages of railway labor did tend to cause increases of the wages of labor in general. The increases caused in other industries would raise the cost of production in those industries. This probably would cause advances in prices, and in consequence the people, including railway employes, would have to pay more for what they bought. If the increases in wages and prices in other industries were as large in proportion as the increases in the railway wages, then railway labor, while it would receive larger money wages than before, would be no better off, because it would be unable to buy any more with its money wages. If the increases in wages and prices in other industries were not as great in proportion as the raises in railway wages, then railway employes would gain at the cost of the general public. The effect would be substantially the same as if the wages of railway employes were left unchanged and a tax were imposed on shippers and travelers, or on the general public, or on both, the proceeds of which were paid as a subsidy to railway employes.

To sum up, it seems probable that under government ownership in the United States the opportunity of employes for advancement to official positions would be greatly reduced. The amount of work required from employes probably would be less on the average than it is now, while the average wage paid to them probably would be somewhat higher than it would be under private ownership. The higher wages paid, and perhaps even more, the increase in the number of men employed, would increase operating expenses. The public would have to meet these higher operating expenses either by increasing passenger and freight rates or by sacrificing the saving in

the cost of capital that it might otherwise make by owning the railways; and perhaps by losing, in addition, the taxes which it now derives from the railways, and possibly by suffering, besides, a railway deficit which would have to be paid from taxes. There can be no justification for thus reducing the amount of work that any class of persons is required to do, or increasing its wages, at the expense of the public, including the working class in general, unless its conditions of work are harder than the average in proportion and its wages lower than the average in proportion. The conditions of work of most classes of railway employes are hazardous, but this is taken into account in fixing their wages, which are relatively high. Therefore, the fact that under government ownership of railways railway employes probably would be able to get easier conditions of work and higher wages is not an argument from the standpoint of the welfare of the public, including the working class in general, for the adoption of government ownership.

CHAPTER XVIII

POLITICAL EFFECTS

MANY persons have contended that the adoption of government ownership of railways in the United States is desirable because by no other means can the railroads be kept from corrupting politics. Others have argued against government ownership on the ground that under it the corrupting influence of the railroads on politics would be increased.

In the past the railroads have been one of the most demoralizing influences in our political life. Their promoters began very early to use questionable means to induce prominent citizens, lawmakers and public officials to support measures giving railway companies public subsidies and liberal franchises. Passes over lines already in operation were issued to almost everybody of influence. Stock often was distributed gratis where it would "do good." Cash bribes were paid when they were the only efficacious means to the desired ends. Hardly any effort, legitimate or illegitimate, was spared to get and keep in public office men who were "friendly."

At first the public was anxious above all things to secure the construction of railways. Therefore, it did not inquire too curiously into the methods used, or condemn them too strongly when they were exposed, if they furthered this greatly desired end. The "Granger" movement of the 70's introduced a new era. The railroads had not brought to the people of the West the immediate prosperity that had been expected. Their managements

had committed gross discriminations and been guilty sometimes of brazen dishonesty. Some drastic legislation for the regulation of railways was, therefore, adopted, much of it resulting in reductions of rates and earnings.

Most railway managers then considered almost any regulation of railways an intrusive interference with their functions and a violation of the inherent rights of investors. Many, therefore, deemed it their duty to use every resource to prevent all regulation except such as conferred on the roads special privileges or advantages. As time passed the attempts at regulation increased. Sometimes they were made by men of honest and public-spirited motives; sometimes by men whose motive was personal aggrandizement or gain. In most states, the companies, in trying to prevent unfavorable and to get favorable legislation, gradually built up strong political machines which ramified everywhere. These machines were usually directed from the law departments; and it was a poor railway that could not afford to have on its legal staff one or more men who devoted themselves almost entirely to the practice of politics. Where the Republican party was dominant the machines usually were Republican, and often controlled the Republican organizations. Where the Democratic party was dominant they usually were Democratic and often controlled the Democratic organizations. They sought to determine the nominations of candidates for the legislature, for Congress and for other public offices; and they were largely represented in the national conventions of the leading parties. When the legislatures and Congress were in session the railway machines had at the state and national capitals large and active lobbies that spared no pains to prevent, and, if prevention became impossible, to control and shape, legislation affecting railways. The ambitions, hopes and fears of public men were constantly played on

by skillful performers; the ubiquitous free pass was peddled constantly; and large contributions were made to campaign funds. Not uncommonly, as a last resource, bribery was used. By means such as these the railways managed for a long time in many states, and even at the national capital, to so corrupt and control politics as to prevent much legislation that would have been unjust and harmful to them, and also much that the interests of the public demanded.

The interests of the public demanded some of the regulation advocated because there had grown up and persisted in the railway business abuses that required regulation to suppress them. The failure of the railways voluntarily to abolish these abuses, and the corrupting influence of the roads on politics, at last had their natural sequel. Public opinion was aroused under the leadership of President Roosevelt, and insisted on the needed legislation. The railway lobbies opposed it; and the railway political machines and lobbies in the nation and in most of the states were rapidly overthrown and broken in pieces. There followed in the five years beginning with 1906 a flood of national and state regulatory legislation. Previously many men had gained office largely with the aid of the railways. Now many — not always of a different type; indeed, not always different men! — won office by attacking the railways.

Railway managers began to see that conditions had changed, and that the future protection of the interests and rights of the roads required the adoption of new means of dealing with public opinion and with political and legislative bodies and public officials. The managers who were as conscientious as they were shrewd — and the number of this class has grown rapidly in recent years — saw that a change of methods was dictated not only by expediency, but by honor and decency. The new methods

adopted are of two kinds. First, the old policy of taciturnity on the part of the higher railway officials has been largely abandoned, and many of them have begun to present the railways' case to the public in numerous newspaper interviews, magazine articles, and public addresses. Secondly, there have been publicly organized to handle legislative matters railway committees which differ equally in personnel and in methods from the old railway lobbies. The old lobbies were composed chiefly of political lawyers. The new committees are composed of responsible officers representing all the departments of the railways. The old lobbies worked in the dark and pulled wires. The duty of the new committees is to make public appearances before legislative committees and railway commissions and present to them the railway side of the matters involved. The principal railway legislative committee is the Special Committee on the Relations of Railway Operation to Legislation, composed of high operating officers. It has a sub-committee composed of mechanical officers to make representations to the lawmakers and commissions regarding regulation of rolling stock matters; an engineering committee to make representations regarding regulation of engineering matters; and a committee of signal officers to make representations regarding regulation of signaling matters. It also has sub-committees in various states which deal similarly with regulation affecting only the railways in their states. The custom of the old railroad lobbies was to oppose all legislation for the regulation or control of railways. The policy of the new committees is stated to be to oppose only unfair regulation, and to cooperate, when any feature of railway operation needs regulation, in framing laws or orders that will gain the maximum of benefit for the public while imposing the minimum of restriction or burden on the railways. The railways have also established the Bureau of Railway

Economics at Washington, D. C., to make and publish scientific studies of railway economic subjects.

While the old railway lobbies have been disappearing, new lobbies to influence railway legislation by methods somewhat similar to theirs have been growing up. The various railway labor brotherhoods are represented by legislative boards at the national and every state capital whose duty is to promote legislation in the interest of railway labor. Some members of the Brotherhood of Railway Trainmen having opposed legislation favored by its legislative boards, that organization adopted a by-law making any member who so acted in future subject to expulsion. This illustrates the discipline maintained within some labor unions. The brotherhood legislative representatives, like the old school of railway lobbyists, do their work thoroughly. They influence the nomination of candidates. They support for election those who promise to favor the measures that they favor and to oppose the measures that they oppose. The numerous representatives they keep at Washington and the state capitals button-hole members of legislatures and Congress, governors and other public officials as assiduously as the old railway lobbyists did.

By these means the brotherhood legislative boards have succeeded in the various states and in the nation in getting a large part of all the legislation that they have supported, and in defeating most of what they have opposed. They have secured numerous state laws to increase the number of men employed in train crews, although the effects are to increase directly the operating expenses of the railways and indirectly the freight and passenger rates that the public must pay, without improving railway service. They have secured much legislation requiring the use of electric headlights, regardless of conditions, although experts, after careful investigation, have reported that the use of high power headlights under some conditions is not

desirable. The cause of more than one-half of all the fatalities on the railways of the United States is trespassing on railway property, and yet in some states — Texas, for example — the labor brotherhoods have defeated legislation to stop such trespassing because in case of a strike it might interfere with their members going on railway property! It is essential to public safety for locomotive engineers to obey block signals; and it is essential in order that the railway managements may make sure that engineers do obey them for the officers to conduct surprise tests by setting signals at stop and then discipline engineers if they are found to be disregarding them. Yet the political influence of the railway brotherhoods was sufficient in Kansas to cause the passage in the spring of 1913 of a law to prohibit surprise tests. Sometimes the railways have tried to array the great voting power of their employés against regulation which has been considered inimical to both. They have sought, for example, to get the employés actively to oppose reductions in rates or to seek advances in them. But these attempts of the managements to line the employés up with them have met with but slight success and have exerted little influence on politics.

The foregoing indicates the past and present relations of the railways to politics in the United States. Whether the roads shall remain in private hands or be transferred to the public, questions affecting them will always be factors in politics. The choice between private and public ownership will always be, politically, a choice between two evils. There will always be danger that under private ownership the railway corporations will revert to their old corrupt methods or devise new ones equally bad; that commercial interests will use political influence to get the kind of regulation of service and rates that they want, regardless of the effects on the railways and the general

public; and that railway employés will use such influence, as they are doing now, to promote unsocial and anti-public purposes. On the other hand, there always will be the danger that under government ownership the shippers, the people of different communities and sections and the employés of railways will use political influence to secure action regarding rates, improvements and extensions, conditions of work and wages that will benefit the various communities, classes and sections at the expense of the general public. The question to be considered, then, is under which policy there is apt to be the greater amount of this exertion of improper political influence, and under which it is likely to be the more harmful.

It is desirable in this connection to bear in mind certain fundamental principles. One is that it is inexpedient to increase more than is reasonably necessary the number of important issues to be fought out in the arena of partisan politics. The more of such issues it is necessary for the public and public men to settle the less time and attention they can give to each, and the smaller are the chances of any of them being settled right. Again, as few problems as possible should be introduced into politics which concern technical and complicated questions. Such problems are very unlikely to be solved right except under some scheme which leaves their solution chiefly to persons having expert knowledge and experience. Third, as far as practicable there should be kept out of politics issues of such a nature that the attitude toward them of numerous communities and sections, or of large classes, is pretty certain to be determined largely by selfish, and only to a limited extent by national, considerations. If the general public, as well as those who are most directly interested for selfish reasons, takes a keen interest in such questions, they cause political divisions along sectional or class lines. If the general public does not take a keen

interest in them, the result is pretty sure to be action for the benefit of communities, sections or classes at the expense of the public. Furthermore, the injection of class or sectional issues into politics has a deteriorating influence on public men. There are some public men who try to regard all public questions from the standpoint of the general welfare. There are others whose main object seems to be to secure the support of enough communities or classes to enable them to get and keep office. Sectional or class issues are likely to operate to the advantage of the latter because they are much more likely than the former to make improper promises to interested sections or classes. The public, as Burke said, is entitled not only to the votes of its representatives, but to their judgment; and any influence that tends to increase the number of public men who talk and vote without judgment, or contrary to their judgment, is a bad influence on politics and government.

Under either private or public ownership there are at least three classes of railway questions that may become political issues. These are the questions of improvements and extensions, of rates, and of the conditions of work and wages of employés.

Under private ownership, whether any improvements or extensions shall be made is determined chiefly by the opinion of the managements of the railways as to whether they will pay; and where they shall be made is determined chiefly by the opinion of the managements as to where they will pay best. Whether improvements and extensions will pay, and, if so, where they will pay best, will, in turn be largely determined by the policy of public regulation followed. Therefore, under private ownership, the railway managements are always likely to use political methods more or less in their endeavor to secure the kind of regulation that they will contend is

requisite to enable them to develop their properties adequately; while other classes of persons are always likely to use political methods more or less to prevent the roads from being allowed to earn larger profits than these other classes consider necessary and just. In order that the railways may make certain improvements it is necessary for them to obtain franchises or other concessions from public bodies. The negotiations regarding such matters have not uncommonly resulted in the railways corrupting public officials or in public officials blackmailing the railways. But the amount of corrupt bargaining between representatives of the railways and members of city councils and state legislatures and other public officials is less now than ever before. The movement for political and corporate reform within recent years has raised the standard of morals and public spirit among both railway men and public men. Even yet the standard is not as high in many places as it should be, and it is possible that it may be seriously lowered again; but this does not now seem probable.

While under private ownership the decision as to most improvements and extensions is reached by non-political methods, under government ownership the reverse might be true. Experience with state railway management abroad, and with legislation regarding postal matters, public buildings, river and harbor improvements, the location of army posts and naval stations, and so on, at home, makes certain that the lawmakers would be subjected to demands and pressure from many communities and sections for appropriations for improvements in existing railway lines or the construction of new ones, or both. The members of Congress who secured railway appropriations for their districts and sections, largely regardless of the effects on the nation as a whole, probably would popularize and strengthen themselves with their constituents,

while those who stood for national interests rather than local demands might make reputations in the country at large as public-spirited statesmen, but be met at home with accusations that they did little to promote the welfare of their constituencies. The appropriations for railway improvements and extensions, like those for river and harbor improvements, and public buildings, might thereby become means by which the representatives would corrupt their constituents and the constituents would corrupt and lower the standard of their representatives. Probably the situation in this respect would be at its worst in the years immediately following the adoption of government ownership. Efforts to bring the American public to a realization of the evils of "pork barrel" legislation heretofore have been comparatively unsuccessful. But the waste that would be caused by making railway improvements and extensions on the "pork barrel" plan would be so palpable and enormous that very likely public opinion would sooner or later rise against it. Probably, however, appropriations for improvements in and extensions of state railways would for long, if not always, be a source of political corruption.¹

The regulation of railway rates has often in the past been a subject of political agitation. Frequently the efforts of the railway managements to prevent action reducing their rates and earnings have been unsuccessful. In many such instances the roads have appealed to the courts and secured decisions holding government-made rates confiscatory and setting them aside. A growing appreciation of the fact that regulation of rates by legislative enactment is likely to be unfair or ineffective has caused the creation of state railway commissions and of the Interstate Commerce Commission chiefly to regulate rates. The

¹ See p. 119.

commissions, having a better understanding of the conditions to be dealt with than the lawmakers, have in most cases been more successful than the lawmakers in reducing rates without making them vulnerable to the charge of confiscation.

In consequence of the development of the policy of regulation by commission the railway rate question has to a large extent been removed from politics. Under a continued policy of private ownership the railways might successfully use improper methods to get control of the regulating commissions. But this seems unlikely. The commissions live, work and have their being in the light of publicity. The railway companies could hardly get control of them without the public knowing it; and the public would hardly know it long without changing the personnel of the commissions.

An opposite danger is that public men who are ignorant or unscrupulous may, under private ownership, so excite and actuate popular prejudice against the railways as to cause the regulating bodies to be filled with men who will follow an excessively drastic policy of regulation, thereby preventing adequate railway development. Experience with public utility commissions in the United States has been, however, that they usually grow fairer and abler as their powers and responsibilities are increased, and that as they grow fairer and abler they gain in public favor. An acute English observer recently has expressed the opinion that the development of the regulating commission in the United States marks a great discovery in political science.² In view of recent develop-

² "There can be little doubt that it is in the utilization of such commissions to stand between the local authorities on the one hand and the corporations on the other that the United States is destined to lead the world and make the most valuable of all contributions to the problem of combining private initiative and enterprise with

ments there seems more ground for optimism than pessimism regarding the effects that, under private ownership, politics will in future have on regulation of rates, and that regulation of rates will have on politics.

Under public ownership Congress might, perhaps, delegate the entire making of rates to the Interstate Commerce Commission, or it might, as is done in several European countries, turn it over to the railway administration, and create to advise with the railway management advisory councils composed of representatives of the commercial, industrial and agricultural interests. But, in any event, the final authority would be in Congress. The authority of others would be merely delegated by Congress and might be taken back by it. Under private ownership, the government's power to fix rates is limited by the constitutional restriction that they must not be made confiscatory, as to the railways as a whole, or even as to any one railway, unless, indeed, it be improvidently or dishonestly managed. Now, rates that are remunerative to railways in some territories would be wholly unremunerative to railways in other territories. Therefore, in parts of the country where the traffic is relatively light and the operating expenses relatively high, as in the West and South, rates under private ownership are, and must be, left on a higher basis than where the traffic is relatively heavy and the operating expenses relatively low, as in the East.

The adoption of public ownership would automatically remove the constitutional restriction against reducing rates below a fair return. One of the arguments made for public ownership is that by removing this restriction it would enable the government to fix rates on the level at

protection of public rights."—"Aspects of Public Ownership," by Sidney Brooks, *North American Review*, Sept., 1911, p. 365.

which they would most effectively promote commerce and industry and be most equitable as between communities. In almost every country where railways are owned by the state, the general basis on which rates should be fixed, in justice, on the one hand, to those who pay them, and, on the other hand, to the general public which derives the profit from or pays the deficit of the railways, has been the subject of animated political controversies. In Prussia, where the government is strong, the State has kept the rates high enough to yield a profit to the public, but, as shown elsewhere, there have been bitter and protracted sectional controversies and contests over the adjustment of "exceptional" freight rates. In most countries the commercial, industrial and agricultural interests, largely by political influence, have sought to get and keep the rates on an unremunerative basis, although not necessarily a low one. That government ownership in this country would prompt the same interests to seek the same result by the same means seems very probable. The United States Post Office Department usually has been operated at a deficit; yet all attempts to readjust its rates are met with strong political opposition.

Of greatest importance, however, is the tendency that government ownership almost certainly would have to precipitate controversies and struggles between different communities and sections regarding their rates. Even under private ownership it is almost impossible, despite the wide differences between the conditions under which different groups of railways are operated, to convince that part of the public located in the communities and territories where rates are relatively high that there is any justification for the wide differences between the rates in different parts of the country. If the railways were consolidated into a single system owned by the public this difficulty would be greatly augmented. The average rate

per ton mile in Ohio, Indiana and the southern peninsula of Michigan in 1910 was only 5.88 mills. In Washington, Idaho, Oregon, California, Nevada, Utah and Arizona it was 11.96 mills, or over 103 per cent. more. Under government ownership both the people of the West and South, where rates are relatively high, and those of the Central and Eastern States, where rates are relatively low, would be part owners of the railways. It would not be unnatural for the former to demand that the railways of which they were part owners should make them as low rates as they made to the other owners. But if there were sweeping reductions in some territories without corresponding advances in others a railway deficit would result. This would have to be made good by levying taxes on the general public. The producers and shippers of the communities whose rates were not reduced would have to pay their share of these taxes; and their position in competing with the producers and shippers of the communities whose rates were reduced would be weakened. If, in order to prevent the impairment of railway earnings, the reductions in rates in some parts of the country were offset by advances in other parts, the communities in which the rates were reduced would gain a double competitive advantage, and those in which they were raised would suffer a double competitive disadvantage. The conflicting interests of the communities that now have relatively high rates and those that have relatively low rates could hardly fail to cause struggles before any body to which Congress might delegate the duty of making rates. The rate-making authority could hardly render decisions that would be satisfactory to all communities and sections. It would be natural for those that were dissatisfied to appeal to their representatives in Congress, thus transferring the controversy to the arena of politics. Developments in Germany have been some-

what along this line; and there is far less difference between conditions in the various parts of Germany than there is between conditions in the various parts of the United States. It has been largely owing to the developments of this nature that the domestic freight rates of Germany have been put and kept on an almost rigid distance basis. Probably this would be the ultimate result in the United States. Before this result was reached the freight rate question very likely would play a part in our politics comparable to that which the tariff question has played. As a matter of fact, the adjustment of freight rates presents a problem very much more important and complex than the making of tariff schedules.

Under private management of railways in the United States the conditions of work of railway employes have been and are to a limited extent a factor in political affairs. As has been shown herein, the labor brotherhoods have appealed with success to the lawmakers and commissions, especially of the states, for various forms of regulation for the benefit of employes; and their success usually has been due to the number of voters that they represent. But most of the conditions of work have been settled by negotiations between representatives of the employes and the officers of the railways, and fixed by contracts technically known as "schedules." The wages paid never have been the subject of political agitation or public regulation. Formerly they were usually agreed on directly by the officers and employes. Recently they have often been fixed in awards by arbitration boards. The only important law affecting wage settlements is the federal Erdmann Act.³ It merely authorizes certain public officials to offer to mediate when disputes arise,

³ Amended in July, 1913, by the Newlands Act.

and, if mediation fails, to help to bring about arbitration, and requires the parties, if they agree to arbitrate, to accept the award. Under private ownership, and with the constitutional safeguards now surrounding individual liberty and property rights, no legislation could be passed which did not continue to leave to the parties either the right to refuse to arbitrate, or the right to reject the award. Therefore, under present conditions, neither the railways nor the employes could by a successful appeal for political action gain any settlement of wages which either of them was irrevocably unwilling to accept. This keeps railway wages from becoming the subject of political controversies and struggles.

The greatest changes in political affairs that would be caused by the adoption of government ownership would result from the transfer of railway employes from the service of private companies to the service of the government. The determination of all the conditions of work and wages of the employes would thereafter have to be made by the government. Even if Congress delegated this function to the railway administration, or to some conciliation or arbitration board, it would always be possible for the employes to appeal to Congress. An appeal might come from only one class of employes, as engineers or conductors, or, conceivably, it might come from all of them. In the former case the public would be likely to take less interest in the outcome than in the latter case. Ordinarily, other public questions of importance would be pending, and the people in general would be divided by their differing views on these other questions. The employes composing the class directly concerned usually would have the moral support of most other railway employes, and also of the large number of persons related to railway employes by the kinship of blood, friendship or class. The numerous voters

making or directly backing the appeal would be scattered throughout the country. They might hold the balance of political power in many congressional districts, or even in the nation itself; and even if they did not, many public men might fear that they did. Does it seem improbable that, in these circumstances, the political party in power would concede to the employes more than the railway administration or an arbitration board might deem proper and expedient? And does it seem improbable that if it refused to do so the leaders of the party out of power would make overtures to the railway employes and their friends which would lead to important results at the next election? Have developments somewhat similar to those outlined been unknown in this and other countries in recent times? Far from it. Upon what ground, then, can it be assumed that they probably would not occur under government ownership of railways in the United States? To assume that under government ownership, railway labor would sometimes ask and press for what was unreasonable is, of course, to assume that its attitude and course would sometimes be unreasonable. But railway labor would be human under public, as it is under private, ownership; and to be human is to be unreasonable when one's own selfish interests are at stake.

If one class of railway employes could by political pressure get more than it was entitled to, why could not all classes? If the demands made by employes, the means used in supporting them and the concessions granted, became wholly indefensible a large part of the public unquestionably would rebel. If the entire body of railway employes presented and pressed unreasonable demands, or demands which seemed unreasonable, very likely they would array the general public against them. The way in which railway labor should be treated almost certainly would sooner or later become a most important

political issue. It is conceivable that the general public might become so aroused against it that drastic measures would be adopted to destroy its political power. This has occurred once even in democratic Australia. When the employés of the Victorian State railways declared a strike in 1903, the public rose against them en masse, and the Colonial Parliament passed an act almost disfranchising them. It deprived them of the right to vote for representatives from any province or district; required their names to be entered on a separate and distinct register from those of all other citizens; and authorized them to elect from this register one person to represent them in the legislative council and two to represent them in the legislative assembly. The effect was to deprive the railway employés of influence over the election of any representative in either house of Parliament except the three that they alone were allowed to elect. For this measure another was soon substituted, which was designed to reduce the political influence of all government employés. The following is the first section of this act: "In order that all officers may be enabled to render loyal and efficient service to the state, it is hereby enacted that no persons or class of persons employed in any capacity (permanently or temporarily) in the public service (including the railway service, the police force, the state rivers and water supply department, and the lunacy department) shall either directly or indirectly take any part whatsoever in or in relation to elections of members of the legislative council or legislative assembly, or directly or indirectly in any way take part in the political affairs of the state of Victoria, otherwise than by recording a vote at a parliamentary election; and no person or class of persons so employed shall directly or indirectly use or attempt to use any influence in respect to any matter affecting the remuneration or position

in the public service of either himself or any other person." ⁴

How difficult, or even impossible, it would be to enforce such a law in a democratic country is manifest. The situation is very different in monarchical Prussia, with its restricted suffrage. The political status of railway employés in that country has been thus described by a recent writer: ⁵ "No journalist, however, who treats of the Prussian railway system would be doing his duty if he failed to emphasize the anti-democratic attitude of the government toward its employés, which constitutes the one great and glaring evil. The government's feudal conceptions may be realized from the fact that it regards its employés as bound to it body and soul, politically as well as industrially; and the open voting system, which still prevails in Prussia in state elections as it did in England half a century ago, places a terrible power for penalization in the hands of the state authorities, should the state employés choose to vote for candidates of whom the government does not approve. In fact, for state employés to exercise the elementary right of citizenship by voting for the candidate and the policy most in accord with their own views, is to run the risk of forfeiting their posts and jeopardizing their livelihood."

Under government ownership in the United States, the public could not adopt measures that would eliminate railway employés as an important factor in politics without actually or virtually disfranchising them. To actually or virtually disfranchise 1,700,000 citizens would involve revolutionizing our government, for without revolu-

⁴ Quoted in "Railways and Nationalization," by Edwin A. Pratt, p. 171.

⁵ J. F. Mills, in an article in the *Railway Review* of London. This paper is the official publication of the National Union of Railway Men of England.

tion the thing could not be done. Under state ownership here the railway employ  s could not be kept out of politics as they are in Prussia except by Prussianizing our government. Such a political revolution seems highly improbable.

Government ownership does not in most countries, and would not in this country, take the railways out of politics. It would merely take the railway corporations out of politics. It would increase the number of difficult problems that would have to be considered and solved by public officials and the public. It would tend to make political issues of questions which can be intelligently dealt with only by men having expert knowledge and judgment, and only by them after thorough investigation and profound consideration. It would tend to introduce into politics issues adapted to divide the people along class and sectional lines. It would entirely abolish political manipulation and the use of political corruption funds by railway corporations, but it would increase the temptation and opportunity for political manipulation and the use of corrupting methods by some other classes. It would in particular increase the temptation and opportunity for the use by large classes of persons, and especially by railway employ  s, of their votes to promote their selfish interests at the expense of the public's interests. Now, it is much easier to deal with the corrupt use of money than to deal with the corrupt use of votes. Even when the corrupt use of money to influence political results is winked at, it is clearly recognized by everybody as wrong. The ethics of the use of the suffrage are not so clearly and generally understood. The suffrage is not conferred for private, but wholly for public purposes. Therefore, it would seem, no man has any right to cast his vote for a policy merely because it will further his own selfish welfare. It is his civic and moral duty to try to ascertain

what policy is best adapted to promote the greatest good of the greatest number, and then to vote for that policy regardless of his own selfish interests. Even though some may take so low a view of the political and social duty of the citizen as to contend that he has a right to vote solely to promote his selfish interests, they will hardly contend that public officials have any right to use their official positions to promote the interests of certain classes at the expense of the public in order to win the votes of those classes. The public man who sacrifices the rights and interests of the public for votes is no better than the public man who sacrifices the rights and interests of the public for cash. Furthermore, the results to the public of the sale of special privileges for votes are as bad as the results of the sale of special privileges for cash. But these principles are not generally recognized; and they are constantly disregarded in practice.

A long and largely successful fight has been waged in the United States against the use by railway corporations of corrupt methods to influence or control politics. By the adoption of government ownership we should throw away all the conquests made in this field, and precipitate a new struggle against new forms of political corruption — a struggle which probably would be much longer, and the ultimate issue of which would be more doubtful.

CHAPTER XIX

CONCLUSION

THE effect of every public policy is a resultant of the action and reaction between it and the general conditions under which it is carried out. It is difficult enough to anticipate the future effects of a public policy that has been and is being followed under a known set of conditions. But in that case we can, to a large extent, judge of the future by the present and past. It is very much more difficult to foresee the various consequences of trying a wholly different policy under the same set of conditions, for then we can only vaguely and uncertainly anticipate the action and reaction of the new policy and the conditions on one another. Ordinarily, therefore, there is much less danger of a capital mistake being made by adhering to, but perhaps also steadily developing and strengthening, a policy that has been followed with some success under given conditions than by trying a wholly different policy under those conditions; and, consequently, it requires less evidence in the court of reason to justify adhering to an existing policy than to justify adopting a new and wholly different one.

It follows that in countries where government ownership and management of railways have been tried with some success the burden of proving that a change should be made to private ownership and management clearly rests on those who advocate the change. It likewise follows that in countries where private ownership and management have been tried with considerable success, the

burden of proving that the adoption of public ownership and management is desirable clearly rests on those who advocate the change to public ownership and management.

The main standards by which to measure the results to a nation of the railway policy that has been followed by it are, the economy with which its railways have been managed, the adequacy and quality of the service rendered, the rates charged, the financial gains made or losses suffered by the public and the influence that has been exerted on the nation's political life. A good deal of data regarding the results of public ownership and private ownership have been given in the preceding pages. The countries whose experience with private management is the most valuable are the United States, England, France, Canada and Argentina. The countries whose experience with public ownership is the most enlightening are Germany, France, Japan, Belgium, Switzerland, Italy, Australia, Austria-Hungary and Canada. If we consider broadly the experience of these leading and typical countries we can hardly conclude that it indicates that the public advantages gained from government ownership ordinarily are greater than those derived from private ownership, or that the disadvantages suffered from state ownership are ordinarily less than those suffered from private ownership.

Besides, the evidence shows that the results to the public of government ownership of railways vary widely. There must be causes of the first importance for the differences between the results of state railway management in Prussia and Japan, and in most other countries. The main differences between the conditions in Prussia and Japan, and in other countries, that affect state railway management and its results are those between the temperaments of the peoples, between the forms and characters of the governments, and between the relations of the gov-

ernments to the peoples and to railway employés. What these differences are have been pointed out in preceding chapters. The Prussian government is highly undemocratic and the conditions in Japan are still largely feudal. Many other countries that have adopted government ownership are more or less democratic. The suffrage in Prussia is fixed largely on a property basis. In most other countries that have adopted government ownership, the suffrage is much less restricted, and in a large majority manhood suffrage obtains, railway employés, in consequence, constituting a large part of the total number of voters. In Prussia, railway labor is forbidden to belong to unions, and is subject to a discipline hardly less rigorous and exacting than that of the army; and in Japan the loyalty of all classes of the people to their government and everything connected with it borders on fanaticism. Most countries that have adopted government ownership, allow their railway employés to belong to unions and do not subject them to a quasi-military discipline and control.

Since doubtless it is owing to these differences in conditions that state railway management in Prussia and Japan is a success, while in most other countries it is much less successful, or a failure, it does not seem illogical to conclude that any other country, in order to attain as high a degree of success in the management of state railways as Prussia and Japan have, must follow the example that Prussia and Japan, and especially the former, have set in organizing and managing their railways. But the example set by Prussia in organizing and managing its railways probably could not be followed without following the example set by Prussia in many other ways; for Prussia could not have organized and managed its railways as it has and does if it had not had the kind of government and people that it has. Now,

for the people of countries such as the United States, England, France, Canada and Australia to follow the political example of Prussia would be for them to revert to a form of government and to political institutions which they regard as inconsistent with the rights of the individual to great freedom of action and with the right of the people as a whole to govern themselves.

One may sincerely and ardently believe that democracy is the best form of government to secure to the citizen the inalienable rights to life, liberty and the pursuit of happiness; one may have confidence that democracy can succeed in so regulating the relations between large business concerns and the public, as well as between individual and individual, as to protect the rights and further the interests of all; and yet be convinced that so far as democratic government has as yet developed in most parts of the world it is not a good form of government for managing commercial enterprises. A government to be successful in the management of large commercial enterprises must, to a very great extent, be organized and administered as successful private business concerns are organized and administered. The fundamental requisites of successful business management cannot be altered by the simple expedient of transferring concerns from private to public ownership. Whether a business is owned and managed by a corporation, or owned and managed by the public, the owners, in order that it may be run successfully, must choose and retain the managers solely because of their special fitness for their duties. Having done this, the owners must give the managers wide discretion and authority, especially for dealing with the employés. The owners must interfere very little with what the managers do, and ordinarily must try to hold them responsible only for general results. A democratic government may successfully regulate private concerns that are thus organized,

officered and managed; but few democracies have ever shown an effective disposition to have business concerns owned by themselves organized, officered and managed in this way.

Now, as to the railway situation in the United States specifically: Is it such as to warrant the belief that a complete change of railway policy in this country is desirable? Or, to come more directly to the point,—do the railway conditions and the general political conditions existing here, and the experience of other democratic nations, indicate that the adoption of government ownership of railways here would be, on the whole, beneficial to the public? The answer to this question is suggested by the following summary of some of the more important conclusions which have been indicated by the facts set forth in the preceding chapters:

1. The railways of the United States are, considering all pertinent conditions, as economically managed as any in the world; and it is probable that under government management there would be an increase in the total expense incurred in rendering railway service.

2. Under private ownership, the development of the railways of this country has gone forward at a rate which, until recent years, has not been equaled in any other country. The capacity of the railway trackage and equipment provided in proportion to both area and population is not surpassed in any other country; and while there are sometimes shortages of facilities for handling freight traffic, these are not peculiar to this country. Similar shortages occur on some of the other leading private and state railways of the world.

3. The quality of the freight and passenger service rendered here is in most respects equal or superior to the quality of that rendered by railways in other countries under conditions at all comparable.

4. The service in this country is, however, very deficient as compared with that of most other countries in respect of the extremely important element of safety. But the evidence indicates that this is due rather to local conditions than to private management, and that the situation in this regard probably would not be improved under government management.

5. Passenger rates in this country probably are no higher than in most other countries for similar services; but the average rate per passenger per mile is much higher than it is on most state railways; and state railways usually make lower passenger rates than private railways.

6. The freight rates of the railways of this country have been, and are yet, based largely on what the traffic will bear. In other countries under public management, the domestic freight rates are usually based rigidly on distance. The rate-making policy followed in this country is well adapted to promoting the fullest development of industry and commerce, but it has led to many unfair and extremely harmful discriminations. Public regulation has greatly reduced the number of these unfair discriminations, and doubtless can reduce it farther; but, in the nature of things, unfair discrimination seems more likely to occur under private management than under state management.

7. The average freight rate per ton mile of the railways of this country is the lowest in the world, excepting, apparently, that of the state railways of Japan; and relatively to the conditions under which they are charged freight rates here are probably the lowest in the world. Private railways generally tend to make lower freight rates than state railways; and low freight rates are of more benefit to the public than low passenger rates.

8. While in many countries state railways cause financial losses to the public, in the United States the public

derives large sums from the railways in the form of taxes. Furthermore, the amount of taxes being collected from them is rapidly increasing.

9. The condition of the labor employed on the railways of this country relatively is as good as that of the labor employed on the railways of any other country; and it could not be substantially improved without imposing an additional burden of rates on travelers or shippers, or both, or an additional burden of taxes on the general public. In either case, the greater part of the added burden would fall on the middle and working classes in general.

10. In view of the experience of many other countries with state management of railways, and of the conditions existing in our own country, it would seem that state management here would have a tendency rather to corrupt than to purify politics.

Clearly the preponderance of the evidence does not indicate that, under existing conditions at least, the adoption of government ownership in the United States would be beneficial to the public.

It would seem, then, that with respect to the railways, there are only two courses which the people of the United States possibly can wisely consider adopting. If they feel now, or shall feel later, that they should ultimately acquire the railways and operate them as a government function, the wise course to take would be to begin immediately to make changes in the form, personnel and administration of their government which would fit it to assume the burden of railway management. They should cease to condone the course of many members of Congress in voting on numerous important measures with a view chiefly to promoting local, sectional or class interests, or to complying with local, sectional or class demands, and insist that their representatives shall habitually put national above all other interests. They should compel a

wider application and stricter enforcement of civil service rules. They should compel adoption of and adherence to the principle of selecting, retaining, promoting and retiring the administrative officers of the government, except the President and members of his cabinet, without regard to political considerations, and solely with regard to their character, ability and special fitness for their posts. The public should require comprehensive changes in the organization and administration of the Post Office Department which would put the rates it charges, the service it renders, the personnel of its officers and employes, and the results sought and gained by it, on a business basis. The government is a large corporation; the people are its stockholders; and if this great corporation is ultimately to take over the ownership and management of any business as large as that of the railways, it is vitally desirable that before it does so its stockholders and officers shall have adopted and become thoroughly habituated to acting on sound business principles. If government ownership and management of railways are adopted before the people and public officials of this country have learned to regard the government as a concern for efficiently transacting the public business in the interests of the entire nation, then government management of railways here will be a terrible failure.

The second of the only two courses which the people of the United States can with any wisdom consider adopting is that of leaving the ownership and management of the railways in private hands, and at the same time developing and perfecting the present system of public regulation.¹ The danger confronting the country under private management and public regulation is two-fold.

¹ For a fuller discussion of government regulation see the author's book, "The American Transportation Question," and especially Chapters XI and XII.

On the one hand, there is the danger that if the pressure of the regulating authorities and public opinion shall be relaxed, some railway managements may revive the old abuses. On the other hand, there is the danger that regulation may become so comprehensive and restrictive as to limit unduly the exercise of discretion, initiative and enterprise by the railway managers and to reduce and keep the profits of railways below the point where investment in them will be sufficiently attractive. But in view of the improvements which have been made within recent years both in the management and in the regulation of railways in this country it would seem that it should not be impracticable to develop a railway public policy by which both of these dangers would be avoided.

Certainly the risks that the American public would take by proceeding vigorously, but patiently and fairly, with the development of the policy of regulation that it has now entered upon, would be much less than those it would incur by adopting government ownership. The former course would be evolutionary, the latter revolutionary; and the readjustments incidental to evolution usually are much less extensive, violent and painful than those made necessary by revolution; while the results flowing from it usually are much more satisfactory and beneficent.

APPENDIX A

MILEAGES OF STATE-OWNED AND COMPANY-OWNED RAILWAYS IN THE WORLD

THE *Archiv für Eisenbahnwesen* for May and June, 1912, published statistics regarding the mileages of railways in the world owned, respectively, by railway companies and governments. Mr. Edwin A. Pratt, an English writer, detected the fact that 2,100 miles of railways in Rhodesia, classified by the German authority as state-owned, were owned by companies. Mr. Pratt also calculated the percentages of the state-owned and company-owned mileages in the different countries. The figures as corrected and amplified by Mr. Pratt were published in an article in the *London Times* of October 1, 1912, and are as follows:

Country	Owned by		Total	Percentage of	
	State	Companies		State-owned	Company-owned
I. EUROPE					
	Miles	Miles	Miles		
Germany	34,604	3,369	37,973	91.1	8.9
Austria-Hungary	22,034	5,520	27,554	80.0	20.0
United Kingdom .....	.....	23,387	23,387	.....	100.0
France	5,509	25,159	30,668	18.0	82.0
Russia in Europe	21,646	15,365	37,011	58.5	41.5
Italy	8,325	1,613	10,438	84.6	15.4
Belgium	2,684	2,600	5,284	50.8	49.2
Luxemburg	118	199	317	37.2	62.8
Holland	1,063	920	1,983	53.6	46.4
Switzerland	1,701	1,218	2,919	58.3	41.7
Spain .....	.....	9,311	9,311	100.0	.....
Portugal .....	.....	1,135	1,806	37.2	62.8
Denmark	1,216	973	2,189	55.6	44.4
Norway	1,555	365	1,920	81.0	19.0
Sweden	2,715	5,968	8,683	31.3	68.7
Servia	356	138	494	72.1	27.9
Romania	1,979	258	2,237	88.5	11.5
Greece .....	.....	981	981	.....	100.0
Bulgaria	987	119	1,106	89.2	10.8
Turkey (Europe) .....	.....	966	966	.....	100.0
Malta, Jersey, Isle of Man .....	.....	68	68	.....	100.0
Total for Europe	107,663	99,632	207,295	51.9	48.1
II. AMERICA					
	Miles	Miles	Miles		
Canada	1,717	22,994	24,711	6.9	93.1
United States .....	.....	241,056	241,056	.....	100.0
Newfoundland .....	.....	666	666	.....	100.0
Mexico .....	.....	15,251	15,251	.....	100.0
Central America .....	.....	1,598	1,598	.....	100.0
Greater Antilles	42	2,989	3,031	1.4	98.6
Lesser Antilles .....	.....	335	335	.....	100.0
Colombia .....	.....	810	810	.....	100.0
Venezuela .....	.....	633	633	.....	100.0
British Guiana .....	.....	102	102	.....	100.0
Dutch Guiana .....	.....	37	37	.....	100.0
Ecuador .....	.....	333	333	.....	100.0
Peru	843	740	1,583	53.3	46.7
Bolivia .....	.....	756	756	.....	100.0
Brazil	5,440	7,831	13,271	41.0	59.0
Paraguay .....	.....	157	157	.....	100.0
Uruguay .....	.....	1,546	1,546	.....	100.0
Chile	1,681	1,843	3,524	47.7	52.3
Argentina	2,467	15,316	17,783	13.9	86.1
Total for America	12,190	314,693	326,883	3.7	96.3

Country	Owned by		Total	Percentage of	
	State	Com- panies		State- owned	Com- pany- owned
III. ASIA					
	Miles	Miles	Miles		
Central Russia in Asia. . . }	6,177	4,622	{ 4,063	57.2	42.8
Siberia and Manchuria. . }			{ 6,736		
China		5,418	5,418		100.0
Japan, including Korea	4,599	1,551	6,090	74.5	25.5
British India	24,445	7,627	32,072	76.2	23.8
Ceylon		577	577		100.0
Persia		34	34		100.0
Asia Minor, &c.	912	2,316	3,128	29.2	70.8
Portuguese Indies		51	51		100.0
Malay Archipelago		757	757		100.0
Dutch Indies		1,551	1,551		100.0
Siam		637	637	100.0	
Cochin-China, &c.		2,177	2,177		100.0
Total for Asia	86,710	26,581	63,291	58.0	42.0
IV. AFRICA					
	Miles	Miles	Miles		
Egypt	2,791	881	3,672	76.1	23.9
Algeria and Tunis		3,134	3,134		100.0
Belgian Congo		516	516		100.0
South African Union	3,316	454	3,770	87.9	12.1
Natal	1,093		1,093	100.0	
Central South Africa	2,589		2,589	100.0	
Rhodesian Railways	2,190		2,190	100.0	
Colonies:					
German East Africa.	446		446	100.0	
German South West	992		992	100.0	
Togo	185		185	100.0	
Cameroons	66		66	100.0	
English		1,806	1,806		100.0
French		1,359	1,359		100.0
Italian		71	71		100.0
Portuguese		1,001	1,001		100.0
Total for Africa	13,668	9,222	22,890	59.7	40.3

Country	Owned by		Total	Percentage of	
	State	Companies		State-owned	Company-owned
V. AUSTRALASIA	Miles	Miles	Miles		
New Zealand	2,715	30	2,745	98.9	1.1
Victoria	3,488	14	3,502	99.6	0.4
New South Wales	3,640	142	3,782	96.2	3.8
South Australia	1,912	170	2,082	91.8	8.2
Queensland	3,659	351	4,010	91.3	8.7
Tasmania	469	164	633	74.1	25.9
West Australia	2,144	276	2,420	88.6	11.4
Hawaii, etc.	88	88	176	100.0	
Total for Australasia..	18,027	1,235	19,262	93.6	6.4
SUMMARY	Miles	Miles	Miles		
I. EUROPE	107,663	99,632	207,295	51.9	48.1
II. AMERICA	12,190	314,693	326,883	3.7	96.3
III. ASIA	36,710	26,581	63,291	58.0	42.0
IV. AFRICA	13,698	9,222	22,920	59.7	40.3
V. AUSTRALASIA	18,027	1,235	19,262	93.6	6.4
TOTAL FOR THE WORLD.	188,258¹	451,863²	639,621	29.4³	70.6⁴

¹ Deducting Rhodesian lines, 186,068 miles.² Adding Rhodesian lines, 455,553 miles.³ Deducting Rhodesian lines, 29.1 per cent.⁴ Adding Rhodesian lines, 70.9 per cent.

Total length of company-owned railways 453,553 miles

Total length of state-owned railways 186,068 "

Total length of the world's railways 639,621 "

Percentage of company-owned railways 70.9

Percentage of state-owned railways 29.1

100.0

APPENDIX B

ACCIDENTS ON STATE AND PRIVATE RAILWAYS

The following statistics were compiled by the Bureau of Railway Economics, Washington, D. C.

RAILWAY EMPLOYÉS. PER EMPLOYEE KILLED AND EMPLOYEE INJURED

Country	Mileage Represented	Year ending	Number of employees		Number of employees per employee	
			Killed	Injured	Killed	Injured
United States.....	243,434	June 30, 1911	3,602 ¹	126,039 ²	464 ³	19 ⁴
United Kingdom ⁵	23,417	Dec. 31, 1911	430	27,648	1,415 ⁶	22 ⁴
France	5,546	Dec. 31, 1910	320	631	1,059	537
State railways.....	5,546	Dec. 31, 1910	83	172	855	413
Private railways.....	19,610	Dec. 31, 1910	237	459	1,131	584
Germany ⁷	34,892	Mar. 31, 1912	554	1,327	1,273	531
State railways.....	2,216	Mar. 31, 1912	9	16	1,266	712
Private railways.....	32,676	Mar. 31, 1912	545	1,311	1,266	519
Prussia - Hesse (State railways)	23,587	Mar. 31, 1912	411	873	1,227	578
Austria	11,783	Dec. 31, 1910	112	1,791	2,479	155
State railways.....	11,783	Dec. 31, 1910	98	1,319	2,409	170
Private railways.....	2,353	Dec. 31, 1910	19	472	2,822	114
Italy (State railways)	8,875	Dec. 31, 1909	122	1,698	1,227	88
Switzerland	1,705	Dec. 31, 1911	31	1,461	1,346	29
State railways.....	1,238	Dec. 31, 1911	29	1,264	1,214	28
Private railways.....	467	Dec. 31, 1911	2	197	3,269	33
Belgium	2,691	Dec. 31, 1910	77	535	960	138
State railways.....	2,691	Dec. 31, 1910	71	494	974	140
Private railways.....	1,217	Dec. 31, 1910	6	41	786	115
Denmark	1,217	Mar. 31, 1911	9	26	1,449	502
Sweden	2,717	Dec. 31, 1909	32	153	1,421	288
State railways.....	5,735	Dec. 31, 1909	21	89	1,188	280
Private railways.....	5,735	Dec. 31, 1909	11	69	1,967	298
Canada	25,400	June 30, 1911	227	2,715	622	53
New Zealand	2,742	Mar. 31, 1911	10	712	1,288	16

¹ Includes 439 employees killed in industrial accidents.² Includes 79,237 employees injured in industrial accidents.³ Excludes contractors' employees.⁴ Based on number of employees on December 31, 1910.⁵ Includes returns of the Prussian-Hessian railways.



CASUALTIES TO PERSONS, IN THE AGGREGATE AND IN RELATION TO TRAFFIC: RAILWAYS OF THE UNITED STATES AND FOREIGN COUNTRIES.

Country	Mileage represented	Year ending	Aggregate number of						Number in relation to traffic					
			Passengers		Employés		Other persons		Total persons		Passengers per 1,000,000 passenger-miles		Employés per 1,000,000 train-miles	
			Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
United States	243,434	June 30, 1911	356	13,433	3,602	126,039	6,438	10,687	10,396	150,159	.0107	.0406	2,4557b	36,3863b
United Kingdom	23,417	Dec. 31, 1911	112	8,492	430c	27,648c	617	1,118	1,159	32,258	.084d	.26329d	1.0032	64.5027
France	5,546	Dec. 31, 1910	71	685	320	631	362	206	753	1,522	.0068	.0652	1.3303	2.6231
State railways	19,610	Dec. 31, 1910	66	306	83	172	104	56	253	584	.0314	.1421	1.7032	3.5295
Private railways	34,892	Mar. 31, 1912	5	379	237	459	258	150	500	988	.0006	.0454	1.2355	2.8928
Germany	2,216	Mar. 31, 1912	115	583	503	1,343	706	367	1,384	2,293	.0048	.0322	1.2392	2.9451
State railways (includes P.-H.)	23,587	Mar. 31, 1912	112	555	554	1,327	680	329	1,346	2,211	.0048	.0161	1.2553	2.9904
Private railways	11,783	Mar. 31, 1912	3	28	9	16	26	38	82	.0071	.0844	.7564	1.3519	2.7439
Prussia-Hesse (State railways)	8,875	Dec. 31, 1910	71	827	411	873	477	210	959	1,410	.0048	.0193	1.2923	2.7439
Austria	1,238	Dec. 31, 1910	29	389	112	1,791	339	334	480	2,514	.0062	.0832	.9908	15.8432
State railways	2,353	Dec. 31, 1910	7	43	19	472	47	68	73	583	.0070	.0428	.8174	20.3047
Private railways	8,975	Dec. 31, 1909	43	550	122	1,693	228	179	393	2,427	.0484d	.6955d	1.8475	25.7279
Italy (State railways)	1,705	Dec. 31, 1911	12	61	31	1,461	56	92	99	1,584	.0080	.0402	1.0769	50.7549
Switzerland	1,238	Dec. 31, 1911	12	48	29	1,264	45	35	86	1,347	.0092	.0370	1.3728	59.8345
State railways	2,691	Dec. 31, 1911	13	2	197	11	27	13	287	.....	.0595	.2611	25.7166	10.6134
Private railways	1,217	Dec. 31, 1910	11	359	77	535	80	85	168	979	.0041	.1327	1.5128	10.4929
Denmark (State railways)	2,717	Dec. 31, 1910	11	855	71	494	70	81	152	990	.0041	.18025	12.8398	3.0394
Sweden	5,735	Dec. 31, 1909	5	8	6	41	10	4	26	33	.0020	.0041	1.0521	5.0373
Private railways	2,717	Dec. 31, 1909	5	8	32	158	59	25	96	191	.0055	.0089	1.0139	5.0373
Norway (State and principal private railways)	25,400	June 30, 1911	1	2	7	26	8	4	16	84	.0045	.0090	1.1164	4.1467
Canada	2,742	Mar. 31, 1911	7	21	10	712	18	18	35	751	.6250f	1.8749d	1.2283	87.4578
New Zealand (Government railways)	3,458	June 30, 1912	9	130	26	201	32	31	67	802	.0863d	1.2471d	1.8791	14.5269
Victoria (State railways)														

a The base upon which these averages are computed comprises both revenue and non-revenue train-miles, so far as official data are available.

b Based on accidents involving train operation only.

c Exclusive of contractors' employes.

d Based on passengers carried, and not on passenger-miles. Passenger mile data not available.

e Casualties to passengers are those in train accidents only. Other casualties to passengers, if any, are included under "Other persons."

f "Other persons" include postal, customs, telegraph, police, and other state employes. Industrial accidents not covered.

g Industrial accidents not covered.

h Basic data not available.

i The accidents reported are only such casualties as occurred in connection with train operation or movement of rolling stock.

INDEX

- Accidents, railway, causes of, in United States, 228-234.
statistics of, on state and private lines, 237-240, 385, 386.
- Acworth, W. M., on causes of government ownership of railways in different countries, 54n.
on democratic states as managers of railways, 85.
on expertness and impartiality of traffic managers of state and private railways, 259.
on increase in freight rates on state railways, 287-288.
on prospects of nationalization of railways in United States, 5.
- Adams, Charles Francis, on democratic states as managers of railways, 86.
- Argentina, railways, capitalization of, 165.
development of, in proportion to area and population, 185-186.
economy of management of, 164-165.
mileage of, 165, Appendix A.
rates of freight and passenger, average, 165, 258.
state railways, capitalization of, 321.
financial results of, 321.
mileage of, 321, Appendix A.
- Asquith, Premier H. H., on probable results of railway nationalization in United Kingdom, 328.
- Associations, railway, purposes and work of in United States, 110-111.
- Atlantic & North Carolina, government and private operation of, 43, 123-124, 145.
- Australia. (*See also* New South Wales.)
railways, economy of management of, 136-137, 164.
financial results of, 317-319,
labor, wages of, 340.
mileage of, Appendix A.
organization of 76, 86-88.
rate-making on, 282-285.
rates, freight and passenger, on, 294-295.
service, adequacy of, 184-187, 192-193, 198-200.
service, quality of, 206, 207, 210, 212, 214, 217, 219, 223.
service, safety of, 236-239.
strikes on, 136, 334, 368.
- Austria. (*See also* Austria-Hungary.)
railways, accident statistics of, 236-241, Appendix B.
cost of construction of, 33.
economy of management of, 135, 136.
mileage of, 33.

Austria, railways—*Continued*.
 state, financial results of, 317.
 state, organization of, 76.
 Austria-Hungary (*see also* Austria and Hungary), general railway policy in, 32-34.
 railways, causes of government ownership of, 52, 53.
 development of, 32-34.
 labor, hours of, on, 336-337.
 labor, unions on, 335.
 labor, wages of, on, 341.
 mileage of, Appendix A.
 rate-making on, 253, 268, 274.
 service, adequacy of, 184-185, 195.
 Belgium, general railway policy in, 31-32.
 railways, accident statistics of, 236-241, Appendix B.
 causes of government ownership of, 63.
 cost of construction of, 31, 160, 174.
 development of, 31-32.
 economy of management of, 138, 150-163.
 financial results of, 315.
 increase in number of employees on, after state purchase, 101-102.
 labor, hours of, on, 336-337.
 labor unions on, 335.
 labor, wages of, on, 161, 340.
 mileage of, 31, 160, 174, Appendix A.
 rate-making on, 258, 268, 274.
 rates, average per passenger and ton mile, on, 160, 258.

service, adequacy of, 183-185, 187, 190, 193.
 service, quality of, 204, 214, 222.
 service, safety of, 237, 239-241.
 state organization of, 75.
 British State Telegraphs, results of public ownership and management of, 139, 150-151.
 Brooks, Sidney, on regulating commissions in United States, 361n.
 Bryan, William J., advocacy of government ownership of railways by, 3, 4.
 Bureau of Railway Economics, establishment and purposes of, 354-355.
 Burton, Senator Theodore E., on wasteful expenditure of public money in United States, 120-122.
 Buttersworth, A. Kaye, on savings in passenger service by railway amalgamations, 218n.
 Canada (*see also* Intercolonial Railway), general railway policy in, 38, 39.
 railways, accident statistics of, 238-241, Appendix B.
 capitalization of, 38, 154, 166.
 development of, 38, 39.
 economy of management of state and private lines, 137, 152-155, 164, 166-169.
 financial results of, 320-321.
 land grants to, 39.
 labor and politics on, 137.
 labor unions on, 335.

Canada, railways—*Continued*.
 labor, wages of, on, 137, 168, 294-295, 340-342.
 mileage of, 38, 154, 166, Appendix A.
 mileage, increase of, 186, 187.
 rates, freight and passenger, on state and private railways of, 154-155, 166, 257-258, 293-295.
 service, adequacy of, 184-191, 194, 201, 202.
 service, quality of, 205, 206, 211, 214, 217-219, 222, 227.
 service, safety of, 238-241.
 Capitalization (or Cost of Construction) of Intercolonial Railway of Canada, 39, 154.
 of North Eastern Railroad of England, 172.
 of railways in Argentina, 165.
 in Australia, 38.
 in Austria, 33.
 in Belgium, 31, 160, 174.
 in Canada, 38, 154, 166.
 in France, 23, 160.
 in Germany, 26.
 in Hungary, 34.
 in India, 41.
 in Italy, 30, 156, 158.
 in Japan, 40.
 in New South Wales, 165, 166.
 in Prussia-Hesse, 170-172.
 in Russia, 24.
 in Spain, 156.
 in Switzerland, 37, 160.
 in United Kingdom, 17, 18, 68, 170, 174.
 in United States, 43, 63, 67, 176.
 Car shortage, on railways of Australia, Austria, Canada, France, Germany,

Hungary, Italy, New South Wales, Prussia-Hesse and United States, 193-200.
 Cincinnati Southern, built by City of Cincinnati, 43.
 financial results of, 321-323.
 Collection and delivery of freight in England, 205.
 Collier, Price, on three-class voting system of Prussia-Hesse, 129n.
 Colson, C., on efficiency of employees on Western Railway of France, 133.
 on state management of Western Railway of France, 147.
 Cook, William W., plan of, to substitute national holding company for present system of private ownership of railways in United States, 4, 5.
 Cunningham, William J., on discipline of employees on state railways of Prussia-Hesse, 233.
 on railway rates in Prussia-Hesse, 298, 299, 300.
 on railway wages in Prussia-Hesse, 340.
 on service of state railways of Prussia-Hesse, 192, 225, 226.
 Deitler, Hans, on nationalization of railways in Switzerland, 35, 36.
 Demurrage, rates of, charged in Germany, United Kingdom and United States, 211-213.

- Austria, railways—*Continued.*
 state, financial results of, 317.
 state, organization of, 76.
 Austria-Hungary (*see also* Austria and Hungary), general railway policy in, 32-34.
 railways, causes of government ownership of, 52, 53.
 development of, 32-34.
 labor, hours of, on, 336-387.
 labor, unions on, 335.
 labor, wages of, on, 341.
 mileage of, Appendix A.
 rate-making on, 253, 268, 274.
 service, adequacy of, 184-185, 195.
 Belgium, general railway policy in, 31-32.
 railways, accident statistics of, 236-241, Appendix B.
 causes of government ownership of, 53.
 cost of construction of, 31, 160, 174.
 development of, 31-32.
 economy of management of, 138, 159-163.
 financial results of, 315.
 increase in number of employees on, after state purchase, 101-102.
 labor, hours of, on, 336-337.
 labor unions on, 335.
 labor, wages of, on, 161, 340.
 mileage of, 31, 160, 174, Appendix A.
 rate-making on, 258, 268, 274.
 rates, average per passenger and ton mile, on, 160, 258.
 service, adequacy of, 183-185, 187, 190, 193.
 service, quality of, 204, 214, 222.
 service, safety of, 237, 239-241.
 state organization of, 75.
 British State Telegraphs, results of public ownership and management of, 139, 150-151.
 Brooks, Sidney, on regulating commissions in United States, 361n.
 Bryan, William J., advocacy of government ownership of railways by, 3, 4.
 Bureau of Railway Economics, establishment and purposes of, 354-355.
 Burton, Senator Theodore E., on wasteful expenditure of public money in United States, 120-122.
 Butterworth, A. Kaye, on savings in passenger service by railway amalgamations, 218n.
 Canada (*see also* Intercolonial Railway), general railway policy in, 38, 39.
 railways, accident statistics of, 238-241, Appendix B.
 capitalization of, 38, 154, 166.
 development of, 38, 39.
 economy of management of state and private lines, 137, 152-155, 164, 166-169.
 financial results of, 320-321.
 land grants to, 39.
 labor and politics on, 137.
 labor unions on, 335.

- Canada, railways—*Continued.*
 labor, wages of, on, 137, 168, 294-295, 340-342.
 mileage of, 38, 154, 166, Appendix A.
 mileage, increase of, 186, 187.
 rates, freight and passenger, on state and private railways of, 154-155, 166, 257-258, 293-295.
 service, adequacy of, 184-191, 194, 201, 202.
 service, quality of, 205, 206, 211, 214, 217-219, 222, 227.
 service, safety of, 238-241.
 Capitalization (or Cost of Construction) of Intercolonial Railway of Canada, 39, 154.
 of North Eastern Railroad of England, 172.
 of railways in Argentina, 165.
 in Australia, 38.
 in Austria, 33.
 in Belgium, 31, 160, 174.
 in Canada, 38, 154, 166.
 in France, 23, 160.
 in Germany, 26.
 in Hungary, 34.
 in India, 41.
 in Italy, 30, 156, 158.
 in Japan, 40.
 in New South Wales, 165, 166.
 in Prussia-Hesse, 170-172.
 in Russia, 24.
 in Spain, 156.
 in Switzerland, 37, 160.
 in United Kingdom, 17, 18, 68, 170, 174.
 in United States, 43, 63, 67, 176.
 Car shortage, on railways of Australia, Austria, Canada, France, Germany, Hungary, Italy, New South Wales, Prussia-Hesse and United States, 193-200.
 Cincinnati Southern, built by City of Cincinnati, 43.
 financial results of, 321-323.
 Collection and delivery of freight in England, 205.
 Collier, Price, on three-class voting system of Prussia-Hesse, 129n.
 Colson, C., on efficiency of employees on Western Railway of France, 133.
 on state management of Western Railway of France, 147.
 Cook, William W., plan of, to substitute national holding company for present system of private ownership of railways in United States, 4, 5.
 Cunningham, William J., on discipline of employees on state railways of Prussia-Hesse, 233.
 on railway rates in Prussia-Hesse, 298, 299, 300.
 on railway wages in Prussia-Hesse, 340.
 on service of state railways of Prussia-Hesse, 192, 225, 226.
 Deitler, Hans, on nationalization of railways in Switzerland, 35, 36.
 Demurrage, rates of, charged in Germany, United Kingdom and United States, 211-213.

Denmark, railways, accident statistics of, 236-241, Appendix B.
 rates, freight and passenger, average, 258.
 Dewsnap, Ernest R., on financial results of state railways, 324n.
 Dividends, guaranteed to and paid by private railways of France, 23.
 percentage of income used for, by railways of United States, 74.
 rates of, paid on stock of railways of United States, 59, 60.
 Economy of management, of British State Telegraphs, 150, 152.
 of state and private railways, 117-180.
 Eltz, Baron P. von, on railway rates in Prussia-Hesse and United States, 300.
 Employés. (See Labor.)
 and railway accidents, 231-234.
 increase in number of, on railways of Austria-Hungary after state purchase, 135.
 increase in number of, on railways of Belgium after state purchase, 101-102, 138.
 increase in number of, on British State Telegraphs after state purchase, 151.
 increase in number of, on railways of Italy after state purchase, 135.
 increase in number of, on Western Railway of

France after state purchase, 101, 131-133.
 number of, killed on American railways, 232, 239-241, Appendix B.
 number of, killed in train operation in various countries, 239-241.
 opportunities of, for advancement under state and private ownership, 331-333.
 power of, as voters, in Australia, 368-369.
 power of, as voters, in Prussia-Hesse, 369-370.
 power of, as voters, in United States, 355-357, 365-371.
 railway, number of, in United States, 8, 126-129.
 England. (See United Kingdom.)

Financial results, of British State Telegraphs, 328.
 of state railways, 303-330.
 in Argentina, 321.
 in Australia, 317-319.
 in Austria-Hungary, 317.
 in Belgium, 315.
 in Canada, 320-321.
 in France, 316, 317.
 in Germany, 314, 315.
 in India, 324.
 in Italy, 315, 316.
 in Japan, 313, 314, 324, 325.
 in New South Wales, 318, 319.
 in New Zealand, 319, 320.
 in Prussia-Hesse, 310-313, 324-326.
 in Russia, 317.
 in Switzerland, 324.

Finley, W. W., on possibility of government ownership in United States, 5.
 France, general railway policy in, 19-24.
 railways, accident statistics of, 236-241, Appendix B.
 capitalization of, 23, 153, 160.
 causes which led to government ownership of part of, 21-23, 52, 316.
 dividends paid by, 23.
 economy of management of, 131-134, 146-148, 151-153.
 labor, hours of, on, 337.
 labor unions on, 335.
 labor, wages of, on, 131-134, 162, 341.
 mileage of, 23, 153, 160, Appendix A.
 rate-making on, 251-253, 257.
 rates, freight and passenger, 153, 160, 292-293.
 rates, government regulation of, 24.
 salaries paid on, 100-101.
 service, adequacy of, 183-185, 187-190, 194.
 service, quality of, 209, 210, 216-218, 220-222, 224.
 service, safety of, 230-231, 230-240.
 state, financial results of, 316-317.
 state, organization of, 76, 83, 88.
 strikes on, 134, 334.
 See Western Railway of France.
 Freight car capacity, on state and private railways, in proportion to population, 190-192.
 per mile of line, 188-192.

Gauges, diversity of, on railways of Australia, 114-115.
 Georgia, experience of, with government ownership of railways, 43-44.
 Germany (see Prussia-Hesse), general railway policy in, 24-26.
 railways, accident statistics of, 236-241, Appendix B.
 cost of construction of, 26.
 development of, 26.
 labor, hours of, on, 338.
 labor unions on, 334-335.
 labor, wages of, on, 340-341.
 mileage of, 26, Appendix A.
 organization and official personnel of, 77.
 rate-making on, 252-253, 263, 266-271, 274, 276-282.
 rates, freight and passenger, on, 292-293.
 service, quality of, 204, 208-213, 216-218, 220-227.
 service, safety of, 229, 230, 233, 236-241.
 state, financial results of, 314, 315.
 Guyot, Yves, on situation on Western Railway of France after state purchase, 132, 134n.
 Hadley, A. T., on attitude of Austrian government toward early railway construction, 32.
 on influence of private enterprise on progress, 113.
 on prospects of government ownership in United States, 2-3.
 Hamilton, Sir Robert, on unwise expenditures for rail-

- way extensions in New Zealand, 119n.
- Holcombe, A. N., on nationalization of the Swiss railways, 36, 37n.
- Holland, railways, accident statistics of, 236-241, Appendix B.
- rates, freight and passenger, average, 258.
- Hungary. (*See* Austria-Hungary.)
- railways, cost of construction of, 34.
- mileage of, 34.
- rate-making on, 262.
- state, financial results of, 317.
- state, organization of, 77.
- strikes on, 134.
- India, general railway policy in, 40-42.
- railways, cost of construction of, 41.
- development of, 40-42.
- financial results of, 324.
- mileage of, 40, Appendix A.
- Intercolonial Railway of Canada, capital cost of, 39, 154, 321.
- causes of government ownership of, 38-39, 54.
- economy of management of, 152-155.
- financial results of, 321.
- mileage of, 39, 154, 321.
- rates of, 258, 293-294.
- wages of labor on, 137.
- Interest, rates of, paid on bonds of railways of United States, 59, 60.
- rates of, which governments must pay, 57-59.
- Interstate Commerce Commission, on the problem of railway accident prevention in the United States, 231n.
- Italy, general railway policy in, 26-30.
- railways, accident statistics of, 236-241, Appendix B.
- causes of government ownership of, 49, 51, 52, 54.
- cost of construction of, 30, 156, 157.
- economy of management of, 135, 155-159.
- financial results of, 315, 316.
- labor, hours of, on, 338.
- labor, wages of, on, 135.
- mileage of, 30, 156, Appendix A.
- rate-making on, 253, 262, 268.
- service, adequacy of, 184-185, 194.
- service, quality of, 224.
- state, organization of, 75.
- strikes on, 135.
- Japan, general railway policy in, 39, 40.
- railways, causes of government ownership of, 33.
- cost to government of, 40, 66.
- development of, 39, 40.
- economy of management of, 130, 148-149.
- financial results of, 313, 314, 324, 325.
- labor on, efficiency and loyalty of, 130, 149, 325.
- mileage of, 40, Appendix A.
- rates, freight and passenger, of, 296.
- Jenkins, J. G., on railway situation in Australia, 88.
- on surplus earnings of rail-

- ways in Australia, 317-318.
- Johnson, Emory R., on effect of government ownership on railway discrimination, 12.
- Keys, C. M., on state ownership of railways in Missouri and Pennsylvania, 44, 45n, 124-125.
- Knapp, Martin A., on possibility of government ownership of railways in United States, 3.
- Labor. (*See* Employés. *See* Politics. *See* Strikes.)
- railway, and politics, under state and private ownership, 120-142, 365-371.
- condition of, under state and private ownership, 331-350.
- hours of, in Austria-Hungary, 337-338.
- in Belgium, 336-337.
- in France, 337.
- in Germany, 338.
- in Italy, 338.
- in United States, 336.
- wages of, 339-350.
- in Australia, 340.
- in Austria-Hungary, 341.
- in Belgium, 161, 340.
- in Canada, 137, 168, 294-295, 340, 342.
- in France, 131-134, 162, 341.
- in Germany, 340, 341.
- in Italy, 135.
- in New South Wales, 168, 294-295, 340.
- in Prussia-Hesse, 162, 172, 177-179, 290, 296-299, 340, 342.
- in United Kingdom, 141, 171, 290, 340, 342.
- in United States, 120-129, 140, 177-179, 296-299, 340-342, 344-350.
- unions, on railways of Austria-Hungary, 335.
- on railways of Belgium forbidden, 335.
- on railways of Canada, 335.
- on railways of France, 335.
- on railways of Prussia-Hesse forbidden, 129-130, 334, 335, 374.
- on railways of United Kingdom, 335.
- on railways of United States, 126-131, 139, 140, 332.
- Land grants to railways of Canada, 39, 320.
- to railways of United States, 47, 50.
- Leroy-Beaulieu, Pierre, on labor situation on Western Railway of France after state purchase, 101, 131-134.
- Le Rossignol, James Edward, on railway rates in New Zealand, 275, 295.
- on state railway management in New Zealand, 86, 87, 319, 320.
- Lobbies, railway, in United States, 352-354.
- labor, in United States, 355.
- Mahaim, Ernest, on state railway management in Belgium, 138.
- on profits of Belgian state railways, 315.

- Mexico, causes of government purchases of railway stocks, 54.
- Meyer, Hugo R., on financial results of Italian state railways, 157-159.
on public management of telegraphs in Great Britain, 151.
- Mileage, railway,
company-owned, state-owned, and total in all countries of world, Appendix A.
in proportion to area and population in various countries, 183-185.
increase of under private and state ownership, 186-187.
- Mills, J. F., on attitude of Prussian government toward railway employes, 369.
- Missouri, experience of, with public ownership of railways, 44, 45.
- Moulton, H. G., on relative costs of water and rail transportation, 291n.
- New South Wales, state railways, cost of construction of, 165, 166.
economy of management of, 164-169.
financial results of, 318-319.
labor, wages of, on, 168, 294-295, 340.
mileage of, 165, 166, Appendix A.
organization of, 86, 87.
rate-making on, 250, 257.
rates, freight and passenger, on, 165, 166, 294-295.
service, adequacy of, 187-193, 198-200.
- service, quality of, 207.
- New York, New Haven & Hartford, passenger rates of, compared with those of railways of Prussia-Hesse, 298.
valuation of, by Massachusetts Joint Commission, 64.
- New Zealand, state railways, accident statistics of, 236-241, Appendix B.
financial results of, 319-320.
mileage of, Appendix A.
rate-making on, 275, 285.
rates, freight and passenger, on, 295.
- North Carolina, experience of, with government ownership of railways, 43-47, 144-145.
- North Carolina Railroad, results of, under public and private ownership, 122, 123, 144.
- North Eastern Railroad of England, statistics of, compared with statistics of Prussian-Hessian State Railways, 171-173.
- Norway, railway accident statistics of, Appendix B.
railway mileage of, Appendix A.
railway mileage of, in proportion to area and population, 184-185.
- Official personnel. (See Organization and official personnel.)
- Operating expenses of railways of United States, 8, 107, 176.

- Operating ratio, and conditions that affect it, 147.
- Operating revenues of railways of United States, 8.
- Organization and official personnel, railway, under private and state management, 74-98.
- Paish, Sir George, on "American methods" and efficiency of English railways, 173.
- Panama Railroad, increase in operating ratio of, after purchase by government, 149-150.
- Passenger cars, number of, in proportion to railway mileage and population in various countries, 187-189.
- Passenger rates. (See Rates.)
- Passenger stations in England, France, Germany and United States, 215-217.
- Pattai, M., on results of state management of Northern Railway of Austria, 135.
- Pennsylvania, experience of, with government ownership of railways, 45, 124, 125, 144.
- Peschaud, Marcel, on state railway management in Belgium, 88, 101, 102.
- Philadelphia & Columbia Railroad, ownership and management of, by state of Pennsylvania, 45, 124-125, 144.
- Politics, influence of, on private, and probable influence of on state railway management in United States, 351-371.
- Influence of, on state railway management in Australia, Austria, Belgium, Canada, France, Hungary, Italy, Japan, New Zealand, Prussia-Hesse, Switzerland, and in various states of the United States, 86-88, 118-119, 122-125, 138.
- Post Office Department of United States, official personnel and management of, 94-95.
- Pratt, Edwin A., on demurrage charges of British railways, 211-212n.
on mileage of state and private railways, Appendix A.
- Prussia-Hesse, general railway policy in, 24-26.
railways, accident statistics of, 236-241, Appendix B.
causes of government ownership of, 49, 51, 55.
cost of construction of, 160, 170, 172, 176.
development of, 24-26.
economy of management of, 118, 129, 130, 159-163.
effects of consolidation of, 108-109.
financial results of, 310-313, 324-326.
labor unions on, 129, 130, 334, 335, 374.
labor, wages of, on, 162, 171, 177-179, 290, 296-299, 340, 342.
mileage of, 26, 160, 170-172, 176.

Prussia-Hesse, railways — *Continued*.
 organization and official personnel of, 77, 91, 92.
 rate-making on, 253, 257, 268-271, 276-277.
 rates, freight and passenger, 160, 172, 176, 289-293, 296-301.
 relation of form of government to management of, 373, 375.
 salaries paid to officers of, 93.
 service, adequacy of, 183-185, 187-192, 195-198, 201, 202.
 service, quality of, 205, 217, 218, 220-227.
 service, safety of, 230, 236-241.
 strikes on, 130.

Rates, railway, and cost of the service, 248, 249, 276.
 and the total cost of transportation, 245-249.
 and value of the service, 243, 248, 273, 276, 279, 280.
 "Ausnahme," in Germany, 267.
 basing-point system of making, 283-285.
 compared with taxes, 242-243.
 commodity, or exceptional, 267-271.
 freight and passenger, adjustment of, under state and private management, 254-286.
 amount of, under state and private management, 287-302.
 in Argentina, 165,

in Australia, 294, 295.
 in Belgium, 160.
 in Canada, 154-155, 166, 293-295.
 in France, 153, 160, 292, 293.
 in Germany, 292, 293.
 in Japan, 296.
 in New South Wales, 165, 166, 294, 295.
 in New Zealand, 295.
 in Prussia-Hesse, 160, 172, 176, 289-293, 296-301.
 in Switzerland, 160.
 in United Kingdom, 289-291.
 in United States, 176, 296-302.
 on Intercolonial Railway of Canada, 293, 294.
 on North Eastern Railway of England, 172.
 on Western Railway of France, 292.
 on baggage in United States and Prussia-Hesse, 297-298.
 on carloads and less-than-carloads in different countries, 262, 263.
 on distance basis, 266-279, 285, 286.
 on domestic and import traffic, 268-271.
 probable political influence on making of, in United States under government ownership, 363-365.

Regulation, government of railways, and public ownership in United States, 2-7.
 increase of, in United States, 47-48.

Regulation—*Continued*.
 preferable to public ownership in United States, 380.
 regarding rates, 251-252, 265, 360.
 secured by organized labor in United States, 139-140, 355-366.
 to prevent undesirable construction, 118.
 Ross, Hugh Munro, on character of English freight traffic, 208n.
 Russia, general railway policy in, 34.
 railways, cost of construction of, 34.
 development of, 34.
 mileage of, 34, Appendix A.
 state, financial results of, 317.

Salaries of railway officers and office clerks in United States, amount of, 91, 99.
 of railway directors in England and United States, 82.
 of railway officers in Austria-Hungary and Prussia-Hesse, 93.
 on state and private railways in France, 100-101.
 See Service.

Safety.
 Safety devices, private companies and the development of, 228.

Schumacher, Prof. Hermann, on economies effected as result of consolidation of Prussian-Hessian railways, 108-109.
 on how Prussia secured capable officers for state

railways system, 92-93.
 on profits of Prussian-Hessian railways, 311.
 on profits of railways of other German states, 315.
 Service, railway, under public and private ownership, 181-241.
 adequacy of, 181-203.
 See Car Shortages.
 quality of, 204-227.
 See Collection and delivery.
 See Passenger stations.
 See Speed of passenger trains.
 safety of, 228-241.
 Slater, J. E., on discipline of railway employes, in Japan, 130.
 on economies effected under government ownership of railways in Japan, 149.
 Social standing of government and railway officers in Japan, Prussia-Hesse and United States, 91-94.
 Spain, railways, capitalization of, 156.
 economy of management of, 155-167.
 mileage of, 155, Appendix A.
 mileage of, in proportion to area and population, 184-185.
 Special Committee on Relations of Railway Operation to Legislation, 354.
 Speed of passenger trains, in Australia, Belgium, Canada, France, Germany, Prussia-Hesse, United Kingdom and United States, 219-224.

- Standardization of equipment and facilities in Australia, Prussia-Hesse and United States, 107-115.
- Stewart, William Downie, on railway rates in New Zealand, 275, 295.
on state railway management in New Zealand, 86, 87, 310-320.
- Strikes, railway, in Australasia, 136, 334, 368.
in France, 134, 334.
in Hungary, 134.
in Italy, 135.
in Prussia-Hesse, 130.
in United States, 127, 128.
in Victoria, 334, 368.
- Sweden, railway accident statistics of, 236-241, Appendix B.
railway mileage of, Appendix A.
railway mileage of, in proportion to area, 185.
- Switzerland, general railway policy in, 35-37.
- railways, accident statistics of, 236-241, Appendix B.
basis of government purchase of, 66.
causes of government purchase of, 54, 55.
cost of construction of, 37, 160.
development of, 35-37.
labor, wages of, on, 137, 148.
mileage of, 37, 160, Appendix A.
rates, freight and passenger, adjustment of, 258.
rates, freight and passenger, amount of, 160.
increases in, 288.
- salaries, official, reduced after state purchase, 137.
service, adequacy of, 183-185.
service, safety of, 237-241.
state, economy of management of, 137, 148, 150-163.
state, financial results of, 324.
state, organization of, 76.
- Taft, William H., on shortcomings of civil service method of selecting men for public office, 97.
- Taxes, amount of, paid by railways of United States, 8, 308-310.
percentage of railway income used to pay, in United States, 74, 313.
percentage of railway income used to pay, in United Kingdom, 313.
- Terminals. *See* Passenger stations.
- Trespassing, fatalities due to, on railways of United States, 234.
- United Kingdom, general railway policy in, 17-19.
railways, accident statistics of, 236-241, Appendix B.
capitalization of, 17, 68, 170, 174.
development of, 17-19.
economy of management of, 169-177.
financial results of, 313.
labor unions on, 335.
labor wages on, 171, 290, 340-342.

- United Kingdom, railways—
Continued.
mileage of, 17, 170, 174.
Appendix A.
probable financial results of, under state management, 328.
probable organization and official personnel under government ownership, 75, 82-83, 91, 93.
provision for government acquisition of, 18, 66.
rate-making policy of, 251-252, 263-264, 267-268, 272.
rates, freight and passenger, amount of, 289-291.
rates, government regulation of, 18-19.
salaries, amount of, paid to directors, 82.
service, adequacy of, 183-185, 187-193.
quality of, 204, 205, 208, 211-213, 215-218, 221, 225-227.
safety of, 229-231, 233, 236-238, 241.
See British State Telegraphs.
See North Eastern R. R. of England.
- United States, experience of, with government ownership of railways, 43-47.
general railway policy in, 42-47.
Panama Railroad, management of, by government, 43.
railways, accident record, causes of, 228-233.
accident statistics of, 235-241, Appendix B.
capitalization of, 62-66, 176.
- causes which may lead to government ownership of, 49-56.
cost of construction of, 43.
development of, 42-43, 47.
economy of management of, 127-130, 139-142, 175-180, 188.
financial results probable under government ownership of, 328-330.
funded debt of, 8.
government regulation of, 2-7, 47, 48, 118, 139-140, 251, 265, 355-356, 360, 380.
labor, hours of, on, 336.
labor unions on, 126, 129, 140.
labor, wages of, on, 126, 129, 140, 177-179, 296-299.
land grants to, 47, 50.
mileage of, 8, 43, 62, 63, 176, Appendix A.
operating expenses of, 8.
operating revenues of, 8.
organization and official personnel probable under government ownership of, 78-98.
rate-making on, 243-286.
rates, freight and passenger, on, 176, 250, 251, 258, 262, 263, 277-279, 296-302.
salaries and wages of, 107.
service, adequacy of, 182-185, 188-191, 193, 194, 198, 201.
service, quality of, 204-207, 211, 214-218, 220, 221, 225-227.
service, safety of, 228-232, 234-241.
strikes on, 127, 128.
valuation of, 61-68.

- Valuations of railways, results of, in United States, 61-68.
- Victoria, railway accident statistics of, 236-241, Appendix B.
 railway mileage in, Appendix A.
 railway strikes in, 334, 368.
- Waterways and congestion of traffic in Prussia-Hesse, 201-202.
- Western & Atlantic, ownership and management of, by state of Georgia, 43, 44, 145.
- Western Railway of France, amount of rates on, 292.
 increase in number of employes of, after state purchase, 101, 131-133.
 increases in wages of labor on, after state purchase, 131-134, 146.
 reasons for state acquisition of, 52, 316.
 state acquisition of, 22-23.
 uneconomical management of, under state ownership, 131-134, 146, 148.
- Whitten, R. H., on valuation of public utility properties, 65.
- Wilson, H. Raynar, on causes of railway accidents in United States, 231-232.
- Wilson, William Bender, on management of Philadelphia & Columbia Railroad, by state of Pennsylvania, 124, 125.
- Wilson, Woodrow, on electoral system of Prussia-Hesse, 129n.
- Wisconsin Railroad Commission, on proper adjustment of passenger and freight rates, 254-255.
- Womack, T. B., on state railway ownership and management in North Carolina, 46, 47, 122-123, 145.

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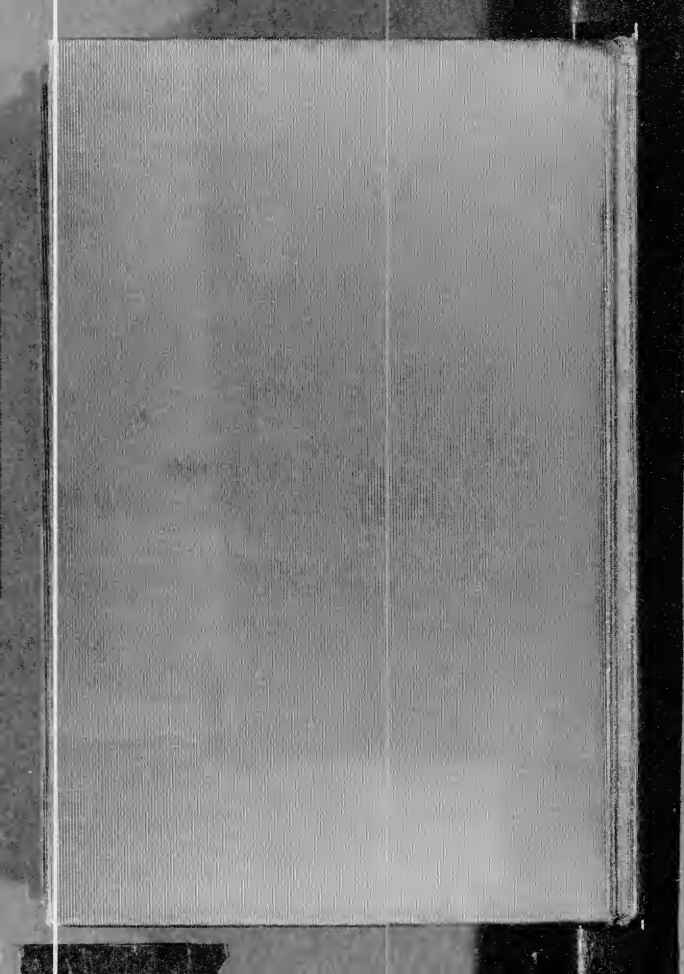
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